

# The Highly Versatile Orange Box

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Ever since I became licensed to operate in the HF bands, I have been enjoyed operating outside of my normal shack location. Each time I would get together with club members during a contest or event, it enhanced my enjoyment of the hobby. I enjoy ARRL Field Day and the Pennsylvania QSO Party the most. On one rare opportunity, I had the opportunity to operate casual DX from St John, USVI.

### The Problem

Any ham who has participated in Field Day can understand the daunting task of finding, packing and setting up their radio gear to operate outside of their normal operating environment. My experience usually begins like this: After getting home from work, quickly unplug all the radio gear and start packing it all into a plastic bin. Once I fill the bin, I'm done — right? Let's check the list. Radios, computer, connecting cables, antenna tuner, sound card interface, headset, microphone, paddle, an array of connectors that I picked up in Dayton last year, patch cords, etc. Got everything? Better check to see that I packed extra fuses — and did I already pack my headset? Better empty the bin to find out. Thus begins the fun task of assembling on location. The same story is typically repeated each time I operate away from home. After a couple of times forgetting, or perhaps damaging a piece of equipment, I knew it was time to do something about it.

### The Solution

I decided very quickly that I wanted a single end-product to solve two similar problems. I would like to create a portable station that could be used for either ARES/RACES or as a portable contest station, using the same set of gear.

When volunteering to be either an ARES/RACES portable net control station in your community, you will be primarily using VHF frequencies. On other occasions, perhaps you'll be on HF as well. In the event of a disaster relief situation, packet may also be vital for sending large amounts of information between net control and shelters. By creating a go-kit that supports all these functions, you can be ready to assist, no matter what band and mode is required.

On the other hand, in order to build a

portable contest station, there are some items that are worth having to increase your operating enjoyment. I prefer to operate in a phone contest with a headset/boom microphone and foot switch along with logging software, rig control and voice keying for saving those vocal chords.

The question is: "Can all of the required equipment, capable of supporting all this functionality, be stuffed into one transportable container?"

### Implementation

With any good invention, there were a couple of false starts in creating the right container to house all the gear. The first attempt was to create a sturdy wooden structure from half-inch finished plywood. After building the box, adding shelves for all the equipment and adding handles, it was too heavy when empty. When I loaded it down with radio equipment, it became unstable and would not travel well — *strike one!*

The second attempt was to find a musician's crate, sometimes called an anvil case. These boxes have steel corners, are somewhat weather resistant and have black material cov-

ering particleboard bases along with built-in 19 inch shelving most times. This was not an ideal solution due to the cost, the final weight and the fact that the shelves would need some major modification to support the radio equipment — *strike two!*

The half-completed, unstable plywood crate taunted me on my workbench for nearly a year. One day I stumbled on a Web site by Steve, KB1DIG, and Kim, KB1GTR, showing a variety of emergency communication boxes.<sup>1</sup> After carefully studying the unique boxes and components, I contacted Jeff Scheller, N2HPO, whose SATERN orange box jump kit design had me intrigued. Jeff was very helpful in providing some photographs that detailed the shelving modifications and the mounting of the equipment. I placed an order for several orange boxes, and then started designing the radio equipment placement — *home run!*

### Construction

There is only room for one shelf in the orange case, so you will have to use some "ham ingenuity" to fit everything in there! In the final design, the radio components were mounted to half-inch sturdy birch plywood near the center of the HVOB case. Each component was securely fastened by screws and/or tie-wraps so that when the box is tilted on end, the equipment did not shift. All wiring was also secured. If the equipment has to be removed from the HVOB, you simply disconnect the three antenna connectors from inside the case and slide out the entire set of components in one piece via the wooden rails.

After a couple of attempts, it was possible to fit everything mentioned here into the HVOB and still close the lid! Fully packed and loaded, the unit weighs 34 pounds. We've all heard the words, "and if you order before midnight tonight you also get..." Although it was not part of original requirements, you can easily operate mobile by placing the HVOB in the trunk of your car and running the remote head cable for the IC-706 to the dashboard. The microphone, speaker and antenna tune button are readily accessible from the radio's remote-able head. All you need is to attach it to 12 V supply and an antenna that will resonate on the bands you wish to operate.

<sup>1</sup>Web site for various emergency communication box designs <http://home.comcast.net/~buck0/combox.htm>.



Paul, NØVLR, is shown operating 20 meter phone while monitoring the local repeater.



The case is closed and ready for transport.

## System Functionality

For emergency operations on 12 V only, you can use the contents of the HVOB to perform these functions: operate 2 meter FM at 50 W or less; simultaneously operate CW, SSB, AM, FM on any band between 440 MHz and 160 meters with the IC-706MkIIIG; tune an HF antenna using the LDG Z-100 antenna tuner; operate the self-contained lighting; use a foot switch PTT and headset on an IC-706; use an external speaker for either radio; set up the 144/440 MHz "Randy Rollup" antenna; set up the 2 meter — 40 meter Yo-Yo-Tenna; charge your cell phone using the cigarette lighter socket, and turn on the lighting with the gooseneck halogen light.

For contesting, you can perform all of the functions as listed above, plus these with the aid of a laptop computer: operate on 120 V ac via the integrated switching power supply; operate all the sound card modes using freely downloadable software for RTTY, SSTV, PSK31, HF/VHF packet, etc; operate computer-based logging and rig control; connect to other computers via network for multi-multi contest setups; set up automatic CW and voice keying during contests using logging software; display APRS station tracking via WinAPRS software, and optionally, access Internet/e-mail/DXCluster/etc.

## Component Listing

Everything listed below is what fits in the HVOB. If you like puzzles, you will enjoy trying to fit everything in there.

The housing for all gear is a hunter's dry box from MTM Case-Gard,<sup>2</sup> which can be purchased through Jeff, N2HPO. I've included references to the various manufacturers' Web sites.

Astron 25 A switching power supply;<sup>3</sup> ICOM 706 MkIIIG HF/VHF/UHF rig;<sup>4</sup> LDG Z-100 tuner with tune control to IC-706;<sup>5</sup> microHAM microKEYER;<sup>6</sup> older model 2 meter mobile rig; small laptop computer; Heil boom headset;<sup>7</sup> foot switch; Bulldog paddle;<sup>8</sup> Anderson Powerpole style 5-in-1 junction; N3ZK's "RandyRollup" 144/440 MHz J-pole antenna;<sup>9</sup> Yo-Yo-Tenna

<sup>2</sup>MTM Case-Gard Web site: [www.mtmcasegard.com/products/camping/dry\\_boxes.html](http://www.mtmcasegard.com/products/camping/dry_boxes.html).

<sup>3</sup>Astron Web site: [www.astronsupplies.com](http://www.astronsupplies.com).

<sup>4</sup>ICOM Web site: [www.icomamerica.com](http://www.icomamerica.com).

<sup>5</sup>LDG Web site: [www.ldgelectronics.com](http://www.ldgelectronics.com).

<sup>6</sup>microHAM-USA Web site: [www.microham-usa.com](http://www.microham-usa.com).

<sup>7</sup>Heil Sound Web site: [www.heilsound.com](http://www.heilsound.com).

<sup>8</sup>Bulldog paddle Web site: [www.amateurradio-products.com](http://www.amateurradio-products.com).

<sup>9</sup>N3ZK's Web site to order the Randy-Rollup: [www.n3zk.com](http://www.n3zk.com).

Deluxe;<sup>10</sup> 2 meter-40 meter antenna; compact, gooseneck lighting; 15 foot long ground wire with alligator clip; 3 inch muffin fan for air equipment cooling; 24 hour UTC clock; pen/paper.

Depending on the purpose of the operation, outside the HVOB you may decide to also bring several longer dipoles, a homebrew 40/80 meter NVIS antenna or the compact, versatile Buddipole Deluxe kit.<sup>11</sup>

## System Set Up and Operation is a Snap!

(1) Open the HVOB case; (2) set up the "Randy-Rollup" and/or Yo-Yo-Tenna antennas; plug into box-mounted SO-239 connectors; (3) connect the ground wire from wing nut to earth ground, (4) Plug in the 120 V ac cord (or 12 V battery); (5) Power up laptop; connect sound card connections and one USB connector.

Two meter emergency operations can be set up in less than 3 minutes, and HF operations can be set up in less than 15 minutes! This system as designed has surpassed my expectations for portability and convenience.

<sup>10</sup>Web site for Yo-Yo-Tenna Deluxe: [www.ham-radiofun.com](http://www.ham-radiofun.com).

<sup>11</sup>Buddipole Web site: [www.buddipole.com](http://www.buddipole.com).

## Field Organization Reports

### Public Service Honor Roll February 2008

This listing is to recognize radio amateurs whose public service performance during the month indicated qualifies for 70 or more total points in the following 6 categories (as reported to their Section Managers). Please note the maximum points for each category:

- 1) Participating in a public service net, using any mode. — 1 point per net session; maximum 40.
- 2) Handling formal messages (radiograms) via any mode. — 1 point for each message handled; maximum 40.
- 3) Serving in an ARRL-sponsored volunteer position: ARRL Field Organization appointee or Section Manager, NTS Net Manager, TCC Director, TCC member, NTS official or appointee above the Section level. — 10 points for each position; maximum 30.
- 4) Participation in scheduled short-term public service events such as walk-a-thons, bike-a-thons, parades, simulated emergency tests and related practice events. This includes off-the-air meetings and coordination efforts with related emergency groups and served agencies. — 5 points per hour (or any portion thereof) of time spent in either coordinating and/or operating in the public service event; no limit.
- 5) Participation in an unplanned emergency response when the Amateur Radio operator is on the scene. This also includes unplanned incident requests by public or served agencies for Amateur Radio participation. — 5 points per hour (or any portion thereof) of time spent directly involved in the emergency operation; no limit.
- 6) Providing and maintaining a) an automated digital system that handles ARRL radiogram-formatted messages; b) a Web page or e-mail list server oriented toward Amateur Radio public service — 10 points per item.

Amateur Radio stations that qualify for PSHR 12 consecutive months, or 18 out of a 24-month period, will be awarded a certificate from Headquarters upon written notification of qualifying months to the Public Service Branch of the Membership and Volunteer Programs Department at ARRL HQ.

926 AD4BL	381 K14KWR	180 K0IBS	165 N7CM	153 WB8RCR
631 KC8NTE	292 K14GEM	175 KB2EV	164 WA2BSS	150 W5DY WB5ZED
482 W2LTB	270 KB9KEG	174 K4DND	160 KE5HYW W4DNA KA8ZGY	149 K5SFM
445 WB7WOW	250 WA2WMJ	170 K7EAJ	140 KG0GG	140 K7BFL KK3F W2EAG
395 KG4TNS	193 KD1SM	167 WA4UJC	156 W7DSB	139 W7USW
387 K14GWC	183 KB5PGY	166 AG9G	155 WD8USA	139 W7USW

138 W1PLW WD9FLJ	116 K6JT	NX1Q KB1NMO NN7D K2TV KB2KHL W3TWW KM1N KF6SHU WB4FDT AA3SB KM5VM K14YV WA2YBM WV8RG K2UL N0MEA WA0VKC N9MM N4MEH	KD5TXD KA1RMV KA1GWE K4BG K8GA WB4BIK N2SW K3IN N3ZOC N2GS N1JX N4EJF W5CU KB5KKT WD8DHC N8OD WD8Q N8DD WB8SIQ K1JJP KF4WJ K7CB K14JQB	82 KC9VVT WD8CJN	81 N2VQA	80 K7MQF KE5DKV W3GQJ K8KV AB8SY	77 KB0DTI N0ZIZ	76 KB3LFG W4CAC	75 NA7G	74 W9RTP	73 K4JRU	72 KK7TN	71 W9RSX	70 KD7ZLF KA0FUI N0DUW N0MHJ N0UKO N0JF N0DUX AA0LD W0ADZ K0VX K0RXC WB4GHU KD4SN
135 N1UMJ	115 KD1LE WX4H	114 N1CKM W4ZJY	99 W5XX K2GW	89 WA2CUW	88 WB2LEZ W5GKH AB1AV W2CC W8CPG K8AE	86 WD0GUF WA1JVV W2QOB	85 KC2ODN N7IE KE4CB	84 N7DRP KJ7NO	83 AA4BN	82 N7EIE	81 K8RDN	80 K0BFX K8RDN	79 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	78 W3CB
131 WB2KNS	114 N1CKM W4ZJY	112 W7ARC K8AMR	110 W7QM W5E W7GB W6DOB W2DSX N7XG N7YSS K1YCQ	97 K6RAU W3ZQN N8NMA	88 WB2LEZ W5GKH AB1AV W2CC W8CPG K8AE	86 WD0GUF WA1JVV W2QOB	85 KC2ODN N7IE KE4CB	84 N7DRP KJ7NO	83 AA4BN	82 N7EIE	81 K8RDN	80 K0BFX K8RDN	79 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	78 W3CB
130 K0LQB N2QZ W0SJS W3YVQ W4FAL WB9JSR	111 KA1ZIA	110 W7QM W5E W7GB W6DOB W2DSX N7XG N7YSS K1YCQ	109 N2OBY KS2J N2GJ	97 K6RAU W3ZQN N8NMA	88 WB2LEZ W5GKH AB1AV W2CC W8CPG K8AE	86 WD0GUF WA1JVV W2QOB	85 KC2ODN N7IE KE4CB	84 N7DRP KJ7NO	83 AA4BN	82 N7EIE	81 K8RDN	80 K0BFX K8RDN	79 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	78 W3CB
129 K2HJ	110 W7QM W5E W7GB W6DOB W2DSX N7XG N7YSS K1YCQ	109 N2OBY KS2J N2GJ	108 N2VC	95 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	85 KC2ODN N7IE KE4CB	84 N7DRP KJ7NO	83 AA4BN	82 N7EIE	81 K8RDN	80 K0BFX K8RDN	79 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	78 W3CB	77 K6RAU W3ZQN N8NMA	
127 W2DWR	110 W7QM W5E W7GB W6DOB W2DSX N7XG N7YSS K1YCQ	109 N2OBY KS2J N2GJ	108 N2VC	95 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	85 KC2ODN N7IE KE4CB	84 N7DRP KJ7NO	83 AA4BN	82 N7EIE	81 K8RDN	80 K0BFX K8RDN	79 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	78 W3CB	77 K6RAU W3ZQN N8NMA	
125 NN7H W4TTO	108 N2VC	95 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	107 K4BEH	106 KF7GC	105 93	104 N7EIE	103 92	102 91	101 90	100 90	99 90	98 90	97 90	
121 W1CAR	108 N2VC	95 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	107 K4BEH	106 KF7GC	105 93	104 N7EIE	103 92	102 91	101 90	100 90	99 90	98 90	97 90	
120 KC5OZT K4GK W0LAW K0BLR K6YR K3CSX N3RB KK5GY K4IWW N1LKJ W1GMF KW1U N8IO W8UL K9FHI K9LGU KA4FZI AC8AR	108 N2VC	95 WB6OTS WB6UZX WB8Z WB8M K0BFX K8RDN	107 K4BEH	106 KF7GC	105 93	104 N7EIE	103 92	102 91	101 90	100 90	99 90	98 90	97 90	
117 KK1X	100 K4SCL	90 KE7DVV	100 K4SCL	90 KE7DVV	100 90	99 90	98 90	97 90	96 90	95 90	94 90	93 90	92 90	

The following stations qualified for PSHR in previous months but were not recognized in this column: (Jan) W2KFV 172, W2DSX 140, KC9IEJ 123, NY3H 106, WB2HP1 101, K04OL 91, K2RRM 83, N2HQL 75, N2EB 74, N2EMG 74, WB2WAK 73, (Dec) WA9APQ 248, KA2YKN 96, W9XAN 81, N2HQL 75.

### Section Traffic Manager Reports February 2008

The following ARRL Section Traffic Managers reported: AK, AL, AR, AZ, CO, CT, ENY, EB, EMA, EPA, EWA, GA, IL, KS, KY, LA, MDC, MI, MN, MO, MS, NC, NFL, NH, NJ, NTX, OH, OK, OR, SD, SB, SC, SFL, SJV, SNJ, UT, VA, WCF, WI, WMA, WTX, WV, WY.

### Section Emergency Coordinator Reports February 2008

The following ARRL Section Emergency Coordinators reported: AZ, CO, CT, EMA, EWA, GA, IL, IN, KS, KY, LA, MDC, ME, MI, MO, NC, NM, NTX, NV, OH, OK, SD, SFL, STX, SV, VA, WPA, WTX, WV, WWA.

### Brass Pounders League February 2008

The BPL is open to all amateurs in the US, Canada and US possessions who report to their SMs a total of 500 points or a sum of 100 or more origination and delivery points for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt in standard ARRL radiogram format.

Call	Orig	Rcvd	Sent	Dlvd	Total
WB5ZED	28	1805	1654	30	3562
N11QI	0	714	2268	0	2982
KK3F	15	799	779	20	1613
W4ZJY	0	799	738	0	1537
WB5NKD	18	249	1246	0	1531
W1GMF	0	300	1143	0	1443
N1UMJ	25	627	597	13	1262
KA9EKG	45	610	560	20	1235
K7BDU	21	856	871	5	1753
WB9JSR	0	583	591	10	1184
W8UL	0	540	4503	2	1045
WB5NKC	58	181	773	16	1028
KW1U	0	405	416	1	822
N81XF	0	376	357	7	740
KD5TXD	10	218	434	14	676
WX4H	2	327	287	5	621

The following station qualified by originations plus delivery points: KK5GY 155.

QST