

## Product Review

# Four State QRP Group Bayou Jumper 40-Meter CW Transceiver

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The Four State QRP Group has a reputation for creativity and innovation. Nothing is off limits in their lineup of kits, which encompasses everything from receivers, to transceivers, to accessories. Among their latest offerings is a modernized homage to one of the most famous transceivers of World War II.

When it was developed at the Royal Signal Special Communications workshop, the transceiver was officially known as the Whaddon Mark VII. It earned its familiar moniker “Paraset” because it was dropped by parachute to resistance operatives in France, Norway, Belgium, and the Netherlands. The original Paraset was a tube-based, CW-only transceiver that covered 3.0 to 7.6 MHz and generated 4 to 5 W output. These radios were considered vital components of the war effort and their clandestine operators placed themselves at grave risk. Merely being in possession of a Paraset could be extremely hazardous to one’s health.

The 21st-century version of this heroic transceiver is the brainchild of Jim Giammanco, N5IB. Using the same fundamental architecture as the original, Jim, along with David Cripe, NM0S, brought the Paraset up to date with solid-state circuitry while still preserving much of its functionality. Jim christened his creation the Bayou Jumper, a nod to his Louisiana roots, after the popular Knight-Kit Ocean Hopper regenerative receiver that so many Novice licensees built decades ago.

Like the original Paraset, it employs a regenerative receiver, but has updates based on the modern designs of Charles Kitchin, N1TEV. The crystal-controlled CW transmitter section borrows from the Four State QRP Group’s NS-40, including its distinctive spiral printed-circuit-board inductors. And like the



Paraset, the Bayou Jumper generates about 4 to 5 W output, although the Bayou Jumper is limited to 40 meters only.

The transceiver includes a built-in straight key (again, just like the original Paraset), but adds a 1/8-inch jack for an external key or keyer. Of course, modern transceivers utilize automatic transmit/receive switching, but World War II agents didn’t have that luxury. As a result, transmit/receive switching in the Bayou Jumper is performed with a rotary switch, just as was done with the original Paraset.

### Bottom Line

For less than \$100, you can take a journey into the past and enjoy a uniquely different operating experience — but this time without those annoying midnight visits from the Gestapo.



## Building the Bayou Jumper

In an effort to mimic the suitcase-style design of the Paraset (see Figure 1), the Bayou Jumper is designed to be housed within a  $7\frac{3}{4} \times 5\frac{1}{4} \times 3$ -inch pine box, complete with a handle and clasp. The enclosure is not included with the kit, but must instead be purchased separately. For this review I used a three-box set available from Hobby Lobby, which was selling for just \$18 (40% off the regular price) at the time this was written. The smallest of the three boxes becomes the Bayou Jumper enclosure and the remaining two can become whatever you desire (parts storage comes to mind).

The Bayou Jumper front panel and circuit board fit perfectly within this box, after a little necessary wood-working. The transceiver kit includes four wood posts, which must be trimmed to support the front panel in a position ever-so-slightly below the inner lip of the box. I shortened the posts through the vigorous use of coarse sandpaper; after 20 minutes of grinding, I had reduced the lengths of all four by about  $\frac{1}{8}$  inch each.

I used wood glue to secure the posts in their corners and allowed everything to dry overnight. The following day I carefully drilled  $\frac{1}{8}$ -inch-diameter pilot holes in the tops of each post to accommodate the screws that would later hold the transceiver in place. Resist any urge to skip the pilot holes, lest you risk splitting the posts.

The Bayou Jumper kit doesn't have a large inventory of components, but the circuit board is crowded, so it pays to be careful. Few things in life are more vexing than finding you've inserted the wrong part into the wrong hole, and then realizing you face a tedious removal and replacement exercise.

In building many kits over the years, I've refined the slowpoke habit of attention to detail. The Bayou Jumper makes this easy with one of the best assembly manuals I've seen in ages. The guide — available as a downloadable PDF file — is professionally written and illustrated, and if you follow the instructions to the letter, you'll be rewarded several hours later with a piece of radio nostalgia that is enjoyable to operate.

On the other hand, if you're like the alternative me who sometimes succumbs to hubris, you might skip critical bits of text and end up doing something supremely frustrating — such as mis-winding the only toroid inductor in the kit. This was a toroid core with three separate



**Figure 1** — One of the original Paraset kits on display at the Bletchley Park Museum in the United Kingdom. [Photo by Timitritus]



**Figure 2** — This triple-winding toroid assembly forms the heart of the Bayou Jumper's regenerative receiver.

windings that forms the heart of the regenerative receiver (see Figure 2). How hard is it to construct this component? Not hard at all, unless you miss the author's admonition about paying attention to the directions in which the wires are wound, and you instead wrap them around the ferrite donut any old way you please — like I did. The result was that my finished



**Figure 3** — The transceiver's front panel attaches to the circuit board on six metal standoffs.



**Table 1****Four State QRP Bayou Jumper****Manufacturer's Specifications**

Frequency coverage: 40-meter CW segment.  
Receiver tuning range >140 kHz, adjustable.  
Transmitter, crystal controlled.

Power requirements: 12 – 13.8 V dc at 25 mA receive, 600 mA transmit (5 W RF output).

Modes of operation: CW.

Receiver sensitivity: –120 dBm.

Power output: Up to 5 W.

Spurious-signal and harmonic suppression: >50 dB.

CW keying characteristics: Not specified.

Size (height, width, depth): In recommended wooden box, 3.25 × 7.75 × 5.5 inches.

**Measured in the ARRL Lab**

Receive, adjusted for 7.0 – 7.160 MHz (see text). Transmit, as specified. Crystals for 7.030 and 7.122 MHz supplied.

At 13.8 V dc: Receive, 29 mA; transmit, 616 mA max (5.4 W output).

As specified.

Noise floor (MDS): –112 dBm.

At 13.8 V dc: 5.4 W with 7.030 MHz; crystal; 4.8 W with 7.122 MHz crystal.

54 dB (See Figure A.) Complies with FCC emission standards.

See Figures B and C.

Bayou Jumper was as deaf as a proverbial post. Upon discovering my error, I had to completely remove, rewind, and reinstall the toroid. The detour cost about 30 minutes, not including time spent cursing to myself.

No matter how experienced you may be, follow the manual word-for-word and assume nothing. The authors have made it as easy as possible to achieve a result you'll be proud to own.

The transceiver's front panel attaches to the circuit board on six metal standoffs (see Figure 3). All the controls, switches, and jacks are on the circuit board and protrude through holes in the front panel. The front panel is predrilled and features attractive labeling.

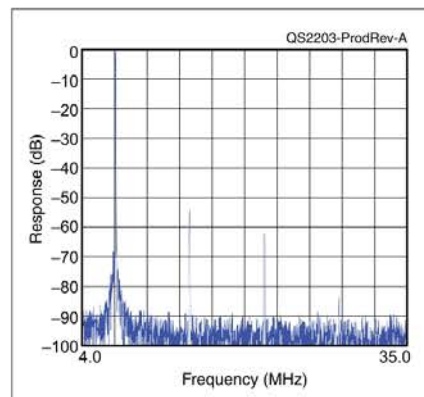
With the properly wound toroid, my Bayou Jumper sprang instantly to life when I applied 12 V dc and moved the rotary switch to the **RECEIVE** position. If you've never played with a regenerative receiver, it takes practice to adjust it for optimum performance. It can be surprisingly sensitive and selective once you get the hang of it. My Bayou Jumper needed internal tweaking to get the receive range where I wanted it (from about 7.000 to 7.160 MHz). I also noticed that the receiver frequency drifted at first, but it stabilized after about 10 minutes of warming up.

The kit provides two transmit crystals in HC-49/U holders: one at 7.030 MHz and another at 7.122 MHz. If you are still blessed with old FT-243-type crystals for your favorite 40-meter frequencies, they'll plug directly into the front-panel socket, too. If not, you can also build adapters for HC-49/U crystals using the two small circuit boards supplied (see Figure 4).

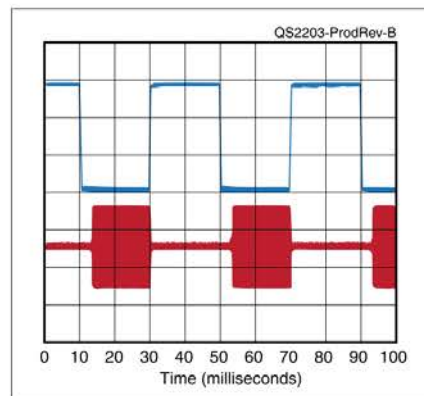
I measured 4 W output at my workbench, but the ARRL Laboratory test results shown in Table 1 offer greater detail. Also see the Lab Notes for more information on receiver and transmitter performance.

**Taking the Bayou Jumper Out for a Spin**

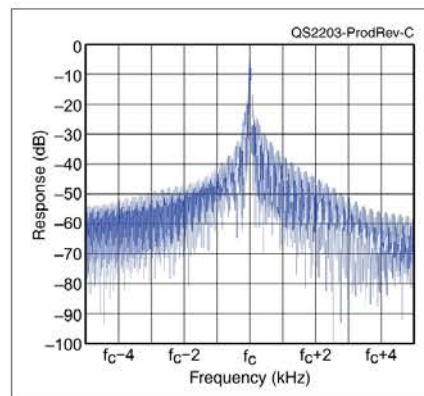
I went for maximum realism for my debut effort and used the built-in straight key. With just a dipole antenna I quickly made contact and didn't embarrass myself too badly in the process. The most difficult aspect of operating the Bayou Jumper is remembering to manually switch between transmit and receive. Receive audio mutes when you switch to transmit mode, but the radio lacks a CW sidetone, which can be disconcerting at first. With the Soup'er Up'er accessory by Dave Martin, NA1MH (also sold by the Four



**Figure A** — Spectral display of the Four State QRP Bayou Jumper. Power output is 5 W on the 7 MHz band. This plot shows the output spectrum from 4 to 35 MHz. The second harmonic is down 54 dB from the carrier, and the third harmonic is down 62 dB. The vertical scale is 10 dB per division.



**Figure B** — CW keying waveform for the Four State QRP Bayou Jumper using external keying. Equivalent keying speed is 60 WPM. The upper trace is the actual key closure; the lower trace is the RF envelope. Horizontal divisions are 10 ms. The transceiver was being operated at 5 W output on the 7 MHz band. Rise time and fall times are 0 ms (no waveshaping). See Lab Notes.



**Figure C** — Spectral display of the Four State QRP Bayou Jumper transmitter during keying sideband testing. Equivalent keying speed is 60 WPM using external keying. Spectrum analyzer resolution bandwidth is 10 Hz, and the sweep time is 30 seconds. The transmitter was being operated at 5 W PEP output on the 7 MHz band, and this plot shows the transmitter output  $\pm 5$  kHz from the carrier. The reference level is 0 dBc, and the vertical scale is in dB.





**Figure 4** — HC-49/U crystals mounted on the two small circuit boards supplied with the kit.

### Lab Notes: Four State QRP Group Bayou Jumper

The ARRL Lab performed some basic tests on the Bayou Jumper, with the results shown in Table 1. Using the simple regenerative receiver takes a bit of getting used to, and it needed about 10 minutes warm-up time for the frequency to stabilize. Receive sensitivity is a bit lower than typical desktop transceivers, but on 40 meters it's fine and the radio hears plenty of signals.

The transmitter easily meets FCC spectral purity requirements (see Figure A). As seen in Figures B and C, the transmitted signal has no waveshaping (no discernible rise and fall time) and the keying sidebands are broad. Users should be aware that a transmitter with this waveform will generate low-level key clicks that could interfere with nearby stations (the keying sidebands are about 1 milliwatt at 500 Hz from the carrier). A waveform and keying spectrum like this would be unacceptable in a desktop radio intended for regular use on the air.

The Bayou Jumper is a clever novelty radio that reinvents the Paraset of World War II with modern components. — *Paul Cianciolo, W1VLF, ARRL Lab Test Engineer*

State QRP Group), you can add the sidetone, along with several other handy features.

For the rest of my operating tests I used an external keyer, which I'd bet those undercover agents would have loved to own. Despite the low-power signal, I made a number of contacts with the Bayou Jumper, and the other operators often expressed astonishment when they learned what I was using.

When I finished an operating session, I simply unplugged the cable and closed the lid on the handsome little case, which some sandpaper and varnish could make even nicer. You can register your Bayou Jumper online and obtain a decal for the case that instructs users to contact "Her Majesty's Secret Ser-

vice" for customer support. For details and real-life support, see the Four State QRP website.

### History in a Kit

I wouldn't consider the Bayou Jumper to be a beginner-level kit, but neither is it overly difficult. In total, I spent about 5 hours assembling and adjusting the transceiver. I used my commercial HF radio to calibrate the Jumper's receiver, but if one has access to a frequency counter it would be much easier.

**Manufacturer:** Four State QRP Group, [www.4sqrp.com/bayoujumper.php](http://www.4sqrp.com/bayoujumper.php). Price: \$98.30 including shipping (US customers only). Wood case: SKU 662536 from [www.hobbylobby.com](http://www.hobbylobby.com). Price: \$30 (on sale for \$18 when this was written).

## West Mountain Radio PWRcheck+ DC Power Analyzer

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West Mountain Radio makes several dc power products, and their new PWRcheck+ looked interesting to me. It is a complete, integrated dc power analyzer for fixed or portable stations. The PWRcheck+ measures voltage up to 60 V dc at up to 40 A continuously, and uses multiple color displays to show voltage, current, watts, amp hours, and even noise — all in either numerical or graphical form. The PWRcheck+ has internal logging of voltage and current events, and it

