

# A New Club, a New Rig, and a New Kit

**T**his month we have three new QRP-related items for your consideration: a new QRP club, a new QRP rig, and a new accessory which, though not strictly for the use in a QRP station, was conceived by and is sold by a QRP club. All attests to the fact that the QRP world is quite alive and kicking. Let's start with the club.

## Northern Ohio QRP Club

What better way is there to inaugurate a new QRP club than by operating together in a contest? That's exactly what the Northern Ohio QRP Club did. Alan Shafer, AC8AP, had been operating in QRP contests both alone and with friends and wondered if there weren't other QRPers lurking in his area. It turns out that there were, and as of press time the membership ranks had grown to 15.

The Northern Ohio QRP Club was formed March 30, 2013 at a meeting of interested parties. The club is organized in the format used by many local QRP clubs, which is to say no dues and no formal monthly meetings. Instead of regular meetings they decided that their meetings would occur dur-

ing QRP field events. The first of those events was QRP to the Field, held this past April 27. They chose Findley State Park in Wellington, Ohio. Members of the new club (see photos A and B) came from several surrounding counties. Their operation sounds much like the typical QRP outing. Alan e-mailed me some of the details:

Saturday morning, the day of the event, members started arriving at 8:00 AM. Gear was unloaded and placed on many of the picnic tables and station arrangements were decided upon. We would have five stations, three primarily CW and two SSB. SSB was added to the QRP TTF event this year and hopes were to draw more hams to the contest as well as SOTA (Summits On The Air) stations. We had two Elecraft K2s, an Icom IC-703+, an Elecraft KX3, and a newly released Chinese radio, the X1M. We had five laptops for logging and a portable wireless router to network them all together. We chose the N1MM logging program for this contest.

While equipment was being set up, antennas were being put up in the trees. Dave Hutchins, KE8M, was our antenna guy for this event, and he made dipoles fed with ladder line that he meticulously tweaked (both the antenna wires and feed lines) to be the best, most efficient antennas possible. Dave brought his crossbow to shoot the lines over the trees, which he claimed before the event that "no tree is too tall." He proved this to be true as he shot the arrow up and over the tallest trees in the shelter

\*1959 Bridgeport Ave., Claremont, CA 91711  
e-mail: <qrp@cq-amateur-radio.com>



Photo A— Members of the new Northern Ohio QRP Club out for QRPTTF. Sitting (left to right): Jack Hubbard, N18N; Anthony Luscre, K8ZT; Michael Foster, N8IUP; Chase (the dog) and Alan Shafer, AC8AP. Standing (left to right): Dave Hutchins, KE8M; Tom Tillack, NQ8O; Doug Bankston, K8IDW; Mark Thompson, WD8KTQ; and Ron Sowders, KA8LMZ. (W8KF photo)



Photo B— Left to right: Ron Sowders, KA8LMZ (standing); Michael Foster, N8IUP; and Jack Hubbard, N18N (waving), all having a great time at the NOQRP outing. (W8KF photo)



Photo C— The Ten-Tec Rebel is something new in ham radio gear—an open-source, factory-built QRP transceiver. See text for details.

area. I think he could have put them in 150-foot trees if they were available. The 40- and 20-meter antennas went up fairly well and those stations were put on the air first.

Alan went on to describe some frustration with getting lines shot over trees in the wind, something I think we've all had to deal with, but at least they were well fed...

Ron Sowders, KA8LMZ, brought a cooler full of assorted pop and water as well as all of our food. We really had it made for our first outing as a club. A family came and set up a picnic near us and fished while their food cooked on a grill. After they ate, they packed up and went home. We quickly grabbed the hotdogs Ron had brought and put them on their grill, which was still hot. We were very thankful for them.

On the air, we really had a great time even though band conditions were not the best. We logged 103 contacts from all over the world. We logged many U.S. and Canadian stations on all of the bands. We also logged the UK, Wales, Brazil, Italy, Netherlands, Germany, and Japan. I was working a Beijing station on 15 meters but just could not quite get it confirmed well enough for the log, but he was hearing me and my 5 watts from northern Ohio with a dipole stuck up in a tree at a state park.

QRP TTF 2013 was the first event for our club and most of the members (had) never set up and operated with each other in the past. In fact, that Saturday was the first eyeball contact for several of us. Many of us had only met once before at the original club meeting. What a great group of hams who worked together like we had done it many times in the past. An outsider would have



Photo D— Backside view of the Ten-Tec Rebel. The USB port is attached to the Arduino board. Also note jack for key or external keyer output.

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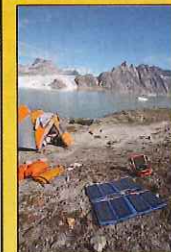


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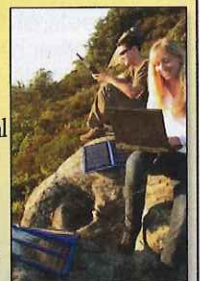
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Photo E— The Four State 4S-Link set up for a PSK-31 session.

thought we knew each other for years. It is funny how hams are that way. We all are looking forward to the next event and the ones who could not make it this time are anxious to attend, too.

It sounds like a very successful outing, Alan, and it's interesting how when people get together with a common goal they tend to bond in a lasting way. I predict the Northern Ohio QRP Club will continue to grow and stage many more successful outings in the future. Listen for them in the next field-op type contest sporting their newly issued call sign, KS8M!

### Ten-Tec Rebel

It seems the engineers at Ten-Tec have been burning the midnight oil of late. Hot on the heels of the new Argonaut VI comes another new rig from Sevierville, the Rebel. It's like nothing we've seen before from Ten-Tec, or from any other commercial-radio manufacturer, for that matter. The Rebel (model 506) is an *Open Source QRP factory-built radio*.

Let me unpack that title for you. The radio uses a Chip Kit Uno 32 Arduino-compatible prototyping platform as the main processing unit. From the literature that was sent out with the beta units, here's the description:

The goal of this radio is to give Ham Radio operators a platform to be able to write code and make changes to a basic QRP radio. As it comes from the factory, it is a basic QRP

rig with some different features in a small package, a CW-only transceiver that operates on 40 or 20 meters. You change bands by moving some jumpers on the PC board to select different filters and frequency.

This is a factory-built radio, not a kit, at least not in the traditional sense of boards and parts that need to be soldered together. However, it *is* a kit in that the owner who has an interest in the expanding world of microprocessors has a platform on which to build a new radio through software.

When first extracted from its shipping box, the Rebel looks like a fairly run-of-the-mill little QRP radio. The front panel (photo C) has the usual controls: an On-Off switch, knobs for Tuning, Volume, and RIT, and a couple of push-buttons. Turning it around, we find a BNC antenna jack, 1/8-inch connectors for headphones and key, and a coaxial power connector. Luckily, all of the connectors are the same as what I currently have in use in the shack, so within about two minutes the radio is alive and kicking. One thing that gives the operator a clue that this is a different kind of radio is that upon first applying the power, one has to wait for a few seconds for the processor to boot. Once booted, a couple of LEDs come on and the headphones are filled with audio. This radio is a two-bander, covering 40 and 20 meters. When you first turn it on, it will be tuned to either 14.060 or 7.030 MHz, depending on which band is selected (based on

jumper settings, as noted above and explained in more detail below).

The Rebel's receiver is a superhet with a 9-MHz IF. The filter is a four-pole crystal unit, and the first and second mixers are SA612s. There's plenty of audio for either headphones or a speaker. There are three filter bandwidths that are selectable by the push-buttons on the front panel. The Beta units were delivered with fairly wide filter settings of approximately 3.0, 2.4, and 1.2 kHz. Input from the testers and reaction from Dayton encouraged Ten-Tec to change this so that the production units will be delivered with bandwidths of approximately 2400, 1500, and 700 Hz.

The main tuning knob is a mechanical encoder that sends a signal to the Arduino, which in turn controls the DDS. The size of the tuning steps is also selectable by push-button. If the step sizes available don't suit the user, he or she is certainly able to get into the code and change them. That's what this radio was made for. The encoder has ten steps per revolution. If a Rebel were to reside in my shack long-term, I'd seriously think about changing the encoder to one which had more steps and then getting into the code to adjust the size of the steps. As it is, a person who is familiar with Steve Weber, KD1JV's rigs will recognize this as essentially an ATS-3 or -4 with a tuning knob.

On the air, the Rebel plays very well. Plenty of audio is available and the QSK is clean. On receive it draws about 140 mA. Key-down it draws just under 1 amp for about 5.5 watts out on 40 meters. On 20 meters this test unit put out about 6.5 watts while drawing 1.35 amps.

Looking at the back of the rig in photo D, you can see that the main RF board is mounted upside down with the parts on the underside of the board. Harder to see, the Chip Kit Uno board is mounted to the underside of the main board with a set of headers extending through to the top side. This is where the user-made mods, accessories, and Arduino-compatible shields will attach. There are several pads on the main board that will offer connections for amenities such as an S-meter, battery voltage metering, power out monitoring. Also available is a low-level audio pin that could be used for a code reader.

The sharp-eyed reader might already have noticed that there is no frequency display on the Rebel. No problem, as there are pads on the main board from which the DDS and BFO signals are available. These could be used to interface with any of the currently available counter or digital dial units. There is also