

## Evolution of No-Solder CPO Kit Continues

NEWINGTON, CT, Apr 28, 2004--The original ARRL Education & Technology Program (ETP) [No-Solder Code Practice Oscillator project](#) continues to evolve. It's now taken the form of a snazzy kit that's ready for some immediate ham radio gratification.

The [New Providence Amateur Radio Club](#) of Berkeley Heights, New Jersey, assembled the kit. Not only did the club package up the parts and drill the holes in the breadboard, they attractively routed the edges of the board, included a good child-sized Phillips screwdriver and gave a Heathkit-like, step-by-step treatment to the assembly manual.

Former ARRL ETP Coordinator Mark Spencer, WA8SME, says Barry Cohen, K2JV, of NPARC led the kitting effort. The kits will go to Salk Brook Elementary School in New Providence. "I think Barry and the club did an exceptional job on the kit. They virtually took the idea and concept as [originally] presented on the Web and turned it into a very high-quality kit that in turn will result in a very high quality experience for the kids," he said.

Spencer said the initial idea behind the project was to show youngsters a way to construct simple electronics projects at home, using simple and safe materials, without having to use circuit boards and soldering. He said that many grade-school science demonstrations of electronics often end up with kids putting a battery on a light bulb or winding a few turns of wire around a nail to make a simple electromagnet. "So you pick up a few paper clips . . . *boring!* In this project, the kids actually put some components together and have a device that actually *does* something," he said.

A good approach with this project is for teachers or other adults to go through the project component by component and talk with children about what each component does and how it all fits together to make the final product.

Then, of course, there's the best part: it's fun.

"Kids love Morse code," Spencer said. "I suspect it is because they think they can talk in private and their parents won't know what they are talking about. No matter what the motivation, getting them to think about Morse code and communicating with wireless technology is a good thing."



The New Providence ARC kit is attractively packaged and labeled by the club's members.



The breadboard is pre-drilled, and the edges are nicely routed. For a complete kit, the club even includes a Phillips screwdriver--so students can get going right away, and teachers can avoid an additional out-of-pocket expense.

2. In addition to the 9 volt battery, there is a battery connector with a red and a black wire. **DO NOT PUT THE CONNECTOR ON THE BATTERY UNTIL THE WHOLE ASSEMBLY IS FINISHED.**

3. Next, identify the Loudspeaker, which is shown here. It also has red and a black wires which will connect to the Loudspeaker screws on the template.

4. The long rectangular piece of plastic with metal on one side is the Morse Key Lever.

5. The two Transistors are the same type, but their leads are bent differently. You'll notice that each Transistor has a flat side. The center lead of the three wires which come from the bottom of the Transistor is called the "Base Lead." On one of the Transistors the Base Lead is bent to come out on the side away from the flat. On the other Transistor the Base Lead comes out on the side where the flat is.

Each kit includes an illustrated, step-by-step assembly manual.