The Wisconsin ARES/RACES

Emergency Coordinator

VOLUME 5   NUMBER 7

JULY 2003

The WEC Newsletter is sent monthly to all American Radio Relay League Emergency Coordinators in the State of Wisconsin. It is intended to provide a forum for ECs to share ideas concerning the organization and training of their respective groups, and as a source of news concerning ARES and RACES activities in the state.

Comments, suggestions and articles (finished or in rough form) are solicited from the readers.

This newsletter and other important documents are posted on the Wisconsin ARES/RACES web page at:

http://wi-aresraces.org

in PDF format, shortly after each issue is published.

Deadlines: The newsletter is mailed on or about the 15th of the month preceding the date shown on the issue. Thus, the February issue is mailed on or about the 15th of January. Articles and notices must reach the editor no later than the 1st of January to be considered for the February issue.

# An Expanded Scale Voltmeter For Emergency Communications

By Richard Polivka, N6NKO, ARES/RACES HF Net Manager

Do you do Field Day? Do you do QRP? Do you do batteries? I do batteries – at home, at play, in the car. I sold my TS-940 for an IC-706MkIIG for this reason – the TS-940 only worked on AC power. My station is now on battery backup. If I lose house power here and the Astron RS-50 dies off, I have 52 A/H of batteries running the show. I also have no way of seeing what the voltage is at any time unless I tie in my Fluke digital multimeter (DMM) into the system and that is a pain.

Most meters that are analog in design – ones with a moving needle – usually are scaled for 0-15 VDC. Astron power supplies can be ordered with metering, but in my case where the power supply sits on the floor, meters are useless, and it was therefore ordered without meters. Usually, we have to read the upper third of the meter to see what our voltage is. For me, that gets a bit tiring since all I need to deal with is reading between 10 to 15 volts. The solution is an expanded-scale voltmeter.

The schematic shows the layout of the expanded-scale voltmeter. The 10.0-volt zener diode establishes the bottom end of the meter scale. The zener diode will not conduct until it sees 10 volts across it. The 1-kilohm series resistor will develop a voltage proportional to the current through the zener diode. So at 15 volts, the voltage drop across the resistor will be 5 volts.

The meter selected has a full-scale reading of 1 mA. When checking the resistance of the meter, it measured 100 ohms with my Fluke DMM. Your meter may
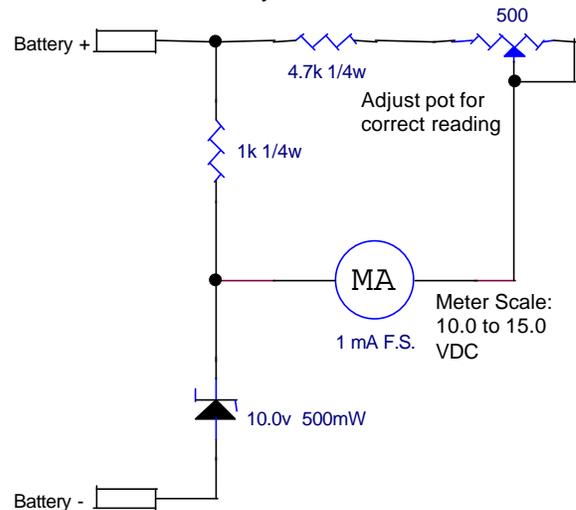
measure different. Using Ohm's Law, at 5 volts and 1 mA, the total resistance needed for the meter circuit is 5000 ohms. To allow for adjustment, I have used a 4.7 k-ohm resistor and a 500-ohm trim pot. The trim pot can be a single turn or a multiple turn design for better adjustment accuracy. Because of the meter resistance, the fixed resistor or pot may end up being different values but the meter loop resistance has to total to 5000 ohms.

There may be a desire to eliminate the 1-kilohm resistor and just put the meter in series with the zener diode. The 1 mA current flow through the meter circuit may not be enough for the zener diode to do its assigned job. If this is the way that you want to do it, you will need a meter that will have a higher full-scale current reading and resize the resistors accordingly. But remember, the higher the current draw, the less battery life will be available.

The circuit could be assembled on a small perfboard and mounted directly to the meter's screw terminals, or the parts could be scabbed together and left hanging (not a good idea, but offered anyway).

The total current draw for the metering circuit is about 6 mA: 1 mA for the meter loop and 5 mA through the 1-kilohm resistor. On paper, this current draw would drain down an 11 A/H battery in about 1800 hours, which is about 76 days, and my 52 A/H station supply in about 8500 hours, which is one year (!!). Total cost will depend on where you get parts. The meter may be most expensive part unless you find one that fits the bill at a swap meet. I purchased two meters already labeled 0-5 on the display for $1.00 each at a swap meet.

When completed, one will be for the station on a Powerpole connection, and the other one will go in the case with the batteries being used for portable operation. Now you will know how much power is left in your battery pack when either operating on batteries for fun or during an emergency.

How Can I Introduce Traffic Into The NTS?

By Dennis Rybicke, K9LGU, STM

Begin by preparing a message in NTS format. That's easy. Look at the famous "pink card," operating aid FSD-218, to find the proper format, an example, and answers to most of your questions. Remember to use an accurate and complete name and address as well as a phone number for the addressee. Street names work best if they are spelled out. Seventh Street works better than 7th St.

Consider using the ARRL Numbered Radiograms with your own text. They can say a lot in a few words. Keeping the text to less than thirty words can make passing the message easier, but even "night messages" have been known to survive the NTS.

Of course, you can list your traffic on any of the section nets - the Badger Weather Net, Badger Emergency Net, Wisconsin Side Band Net, Wisconsin Novice Net, Wisconsin Slow Speed Net, either session of the Wisconsin Intrastate Net, or on Sunday's Wisconsin ARES/RACES Net. The net control station will find someone to take your message and get it

on its way. But what happens if you don't have HF privileges?

As a technician class licensee, your best route is to contact a local ham that can take your traffic and pass it along to a section net. Many two-meter repeaters across the state have operators who monitor and are capable of handling traffic. Ask on your local nets. Ask at your local club meetings.

Use the Internet to check the list of hams from your area that check into the section nets. Look at the QNI Roster on the Wisconsin Section page of the ARRL web site. Or request the list via email or via a hard copy from your STM.

Keep the NTS working. Send a greeting to an old friend, a birthday message to a distant relative, congratulations to someone you admire, or a thank you note for a QSO, some advice, or to anyone who has helped you in your ham career. It's fun. It's easy. It is excellent training.

On all of our section nets, we try to disseminate as much traffic as possible. Traffic that is not passed should be sent to the next section net -- BWN to BEN; BEN to WSBN; WSBN to WNN, WSSN, and both sessions of WIN; late WIN to BWN. That way we will try to make traffic available to all of our outlets.

Quick Quiz (answers on page 4)

1. When did RACES start?
    a. 1948
    b. 1952
    c. 1966
    d. 1970
    e. 1975

2. Who can activate RACES?
    a. Emergency Coordinator
    b. Emergency Manager
    c. Fire Chief
    d. Sheriff
    e. Any of the above

3. When was the first Emergency Communications (EmComm) course offered on the Internet by the ARRL?
    a. 1967
    b. 1977
    c. 1997
    d. 2000
    e. 2002

4. What is the principal advantage of NVIS (Near Vertical Incident Skywave) propagation to emergency communications?
    a. focusing of the signal, like the beam of a flashlight, toward the station of interest
    b. little energy is wasted in sending the signal to nearby (< 200 mile) sites

    c.   reliable long-distance (> 2000 miles) communications

    d.   reliable short distance (100 – 200 miles) communications

    e.   all of the above

Braaaaaap!

By Jerry Wellman, W7SAR

[Your editor extracted the portion of this article on Packet Radio from Jerry's Search and Rescue column in WorldRadio, June 2003. I've been a long time reader of his column, which is always excellent and focused on emergency communications. Jerry can be reached by mail at PO Box 11445, Salt Lake City, UT 84147, or via email at jw@desnews.com. Our sincere thanks to Jerry and WorldRadio for permission to reprint.]

Remember packet? You know, that digital mode that began in Canada in the 1970s and took over the world by storm? That mode, which in the mid-1990s was generating messages by the hundreds or thousands every day? Remember that old dusty terminal node controller you have not used for years?

In its heyday, I had a great time running the SLC BBS in Salt Lake City. It was neat to see hundreds of messages every day relayed in from various other bulletin boards around the region. At one time there were several hundred users registered on the BBS. That old 286 computer did well with four serial ports, TNCs, and radios. I used MSYS as my BBS software of choice. Those were the days! Unfortunately time to run the BBS became difficult to find, so it left the air about the time the Internet began to handle most of the Amateur Radio messaging needs.

Several years ago I had a surplus Pentium 150 and an 8-port serial card that was begging for a use. I looked at some dusty TNCs and thought it would be good to put a BBS back on the air. I found my old MSYS software disks and spent a day getting it all working and on the air. In all the time it's been on the air, it has collected a total of 31 messages and a handful of users. It is still on the air and I mostly use it to demonstrate packet radio.

Ok folks, here's my focus this month. What are you doing with packet radio?

Get on the Internet and do a search of packet radio. The search brings up a multitude of sites, and EVERY Amateur Radio site that mentioned packet radio ties it to public service. I found operating manuals, ARES specialty certification exercises. I found twenty reasons why a county's emergency operations center should have a packet station. I found a wealth of packet material, most of it from the 1990s, but still valid.

If I were an emergency communications manager for a city and wanted to setup a communications station, I might get on the Internet and search for "emer-

gency radio systems". Besides the normal links, I would see a significant number of Amateur Radio links and I would hazard a guess most of them would refer to packet, HF, VHF, repeaters, etc. So now I call my local ARES group and ask about these various modes. I'm told how packet radio is a great way to pass message traffic in an emergency and how a BBS can handle multiple connections, store and forward messages, and how accurate the text is because of the error correcting nature of packet radio.

Here is where the Amateur Radio community might develop a concern. What if the city official wanted a demonstration? Perhaps he said, "Can we go now to visit a station and see how this all works?" Or, he asks, "How many stations are available if we had an emergency right now?"

You might respond that a number of stations are now using APRS (automatic position reporting system) and some are using their computers for PSK31. But how would you respond to the question: How many packet stations are available right now? Do you have a local full function BBS (not the BBS built into a TNC)? Do you have operators familiar with how to use the system or BBS? How many "no call" stations would be on the air because we've forgotten how to enter a call sign into our TNC? Lots of food for thought.

Years ago I lusted for a Kodak Diconix portable printer. Those were so neat. They used five C-cell batteries, an ink jet cartridge and were just the right size and weight for a portable packet station. And what about those Radio Shack Model 100 computers that would run for weeks on four AA batteries?

What if you needed to set up a packet station at a field location without power? Do you know what size of an inverter you would need to run a laser printer? Would your spouse allow you to take the color printer into the field?

I was asked by the local ARES group to give an hour presentation about packet radio. The last time I set up my portable demo, it was a Boy Scout event, perhaps a year ago. I was embarrassed when I could not quickly find my TNC-to-radio cable. It took a while to remember the settings for my Model 100. It was a wake-up call to me when it took the better part of an evening to reassemble my portable packet gear and find all the components that had wandered into other uses.

I'm going to repent. Following my ARES presentation, I am going to keep my portable gear in its own carrying case and I will test it more often than once a year! I'm going to post articles on the BBS as time permits and offer some of my junk to other ARES members (such as the 500 or so RJ-11 jacks, or the several extra Diconix printers I've collected). I'm going to post an offer to help build j-pole antennas

- you bring the pipe and fittings and I'll donate the coax and teach you how to build it. I realized that I've got to help give value to having packet stations in the area up and running. So instead of posting messages on the Internet, some of them I can post on the BBS to give purpose for local operators to get connected again.

The way I figure it, there must be a zillion TNCs out there gathering dust. The value in an emergency is great! But only if the system works and operators are able to quickly respond. So get off your backsides and dust off those packet stations! Send some test messages. Connect to someone and have a QSO. Rediscover packet radio!

By the way, I'm finding old Kodak Diconix printers on various auction sites for as little as $5. They come in two varieties: parallel and serial. Be sure you check to get one you can use with your portable computer. The model I prefer is the "150 plus" but the regular "150" or the "180" will do great. You can find ink jet cartridges either on the auction or from many commercial outlets. You can refill the cartridges easily as well! One hint: if the printer is advertised as "dead" you may get a good deal if you simply replace the fuse inside it. So far I'm batting 100% with the several I've obtained for under $5. Each was listed as non-working, but only needed a new fuse to get them up and running. If the ink cartridge has leaked all over the printer, you should know the ink is water-based. The printers clean up very easily!

Leadership Changes

Seven of them this time! It seems to be a natural progression, with experienced ECs often cultivating their replacements and then stepping aside after a number of years to let others take over. All of these changes are in the new EC Roster, available to ECs and above for downloading from our website. **Arnold "Bunker" Alt, KD6SXA**, is the new (29Apr) EC for **Lafayette County**, having taken over from Ray Laverty, KB9AKM (Ray continues as Iowa EC). James Ley, NX9F, has stepped down as EC for **Dunn County**, and is replaced (7May) by **Andrew Wagner, KB9TAC**. **Rick Abbott, WX9M**, replaced Jeff Ramlow, N9WBR, as EC for **Portage County** on 21 May. **Scott Nelson, KC9BLE**, is now (28 May) EC for **Brown County**, replacing Lisa Kolbusz, N9VJL. **Dave Witt, WD9W**, replaced Bob Fishelson, K9GEI, as EC for **Fond du Lac County** on 1 June, and **Les Larson, AB0GT**, replaced Paul Stein, KB9NJC, as EC for **Douglas County**, also on 1 June. Richard Dailey, W9IBL, has stepped down as EC for **Jefferson County**, and is replaced by **Todd Lindert, KB9TWL** (9Jun). Congrats and welcome to Bunker, Andrew, Rick, Scott, Dave, Les and Todd! Send 'em an email!

Answers to Quick Quiz:

1. FEMA started RACES in 1952 (b) for Civil Defense purposes.

2. The Emergency Manager (b) in a county, or anyone up the chain in Wisconsin Emergency Management.

3. d, December 2000.

4. Reliable HF signal coverage in a circle of between 100 and 200 miles or more with no skip zones (d). See the Nov 1999 issue of this newsletter for details.

EmComm Statistics

By Jack Morrison, N9SFG, Asst SEC for Training

A total of 109 hams in Wisconsin have graduated from one or more of the three ARRL EmComm courses so far (to 19 May 2003):

Level I	80
Level II	19
Level III	10
TOTAL	109

Twenty of the 109 graduates are ECs, with 15 having completed EmComm I and 5 having completed all three courses.

[A note from Stan: Several more ECs have graduated from EmComm I since Jack wrote this, and one has completed all three. Not sure about the usefulness of the EmComm courses? Ask a fellow EC who has taken them. I have yet to hear of a ham that felt they were not fully worth the time and effort, and I have seen evaluations from hundreds of hams from all over the USA.]

Field Day Is Upon Us

The largest practice session for emergency communications in the world, Field Day, is 28 – 29 June. Your editor will be out with the Ozaukee Radio Club (SSC), as usual. The ORC came in 3rd in the world last year in the 5A category, and they are tooling up to do better this time! Their logging computers were networked last year, and an observer in the main tent could watch the scores pile up simultaneously from all five-transmitter sites on the server's screen. What a blast!

Aside from its contest nature, Field Day really is a terrific emergency communications exercise. Plan on attending and operating with a group nearby you, or maybe your own group will participate in the new Group F class in your county EOC. However you do it, do it! It is good for ARES/RACES hams and other hams as well, and it gives us a wonderful chance to interact with our non-ARES/RACES colleagues. Oh yes, you can contact me on the air (the ORC club call for FD is W9LO) for the extra points given for contacting your SEC. 73, Stan