

### DELARA Meetings

- 3<sup>rd</sup> Wednesday of every month
- Tri-Twp. Fire Dept.
- 7:30 PM

### DELARA On the Air

- Monday evening net
- 145.17 repeater
- 8 PM Call K8ES
- Volunteer for Net Control!

### DELARA Officers

- President:  
Tim Trombley K8TAT
- Vice President:  
Dave Le May WB2CWJ
- Sec/Treas:  
Ken Bird W8SMK

### In This Issue

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### The Calendar

- Oct 13 ARES Meeting
- Oct 15 (12) Tech Class 3 Test at 2PM
- Oct 19 DELARA
- Oct 20 Contest Team net 145.17

## It's Boat-Anchor Month!!

Now is the time to stand in front of that special place in your shack, the place I call "The Infinity Shelf." It carries that name because anything placed amongst the goodies on that shelf rests there for an infinitely long time! Mostly that's because I've forgotten it's there. Or it might be there's just not been the need for a 1940's tube tester. DELARA, being a full-service club, offers you the chance not only to clean out your "Infinity Shelf" but to actually replace stuff with other stuff!

Bring your 'stuff' to the club meeting. Be prepared to talk a bit about it. If someone wants it, great! If nobody claims it- you get to take it back home. That's the only rule. Kicking and scratching to get that cherished object is prohibited.

We'll look for you there behind a pile of "Infinity Stuff!"



Well it's that time of year to hear political campaign rambling from the many candidates in their campaigns. DELARA isn't to be left out of the political ring either.

Each year, we (DELARA) have elections for new club officers which consist of a president, vice-president, and secretary/treasurer.

Annual elections are held during the regularly scheduled monthly meeting in November, this year that's November 16. We will hold these said elections, with all members present at the meeting, with the majority vote counting, no absentee ballots allowed, must be present to vote. [*The crowd cheers, banners wave! Oh-sorry, got caught up in the process -ed*]

Now these officer positions can be held by any DELARA member, so if you're interested in being an officer step forward with your nomination for one of these positions before November. **PLEASE**, it's just a minimum of one year commitment to DELARA, with renewal yearly if you so desire, for just a couple hours of time more/less each month. No 4 year commitment here! [See Bylaws, page 7 -ed]

Hope to see you all at the meeting this month; I'm sure Dave has something good to share again with us, so see you there.

73, K8TAT, Tim

## K8H event!



The 26<sup>th</sup> Delaware Ohio All-Horse Parade Special Event that we operated from Sept 10<sup>th</sup> – Sept 18<sup>th</sup> under the callsign of K8H is now QRT. During the event we made 1194 QSO's and worked 51 different counties. While reviewing the log to tally up the count I noticed that Larry, N9AUG logged a Q with Mr. Low Band DX'ing ON4UN on 20m CW. I'm sure there are other Ham celebrity's in the log as well.

I would to thank The St. Louis and Suburban Radio Club (SLSRC) all of our Special Event operators (and spouses) for making this event possible. Our Special Event operators this year in callsign order were Gary, K8EHB, Joe, K8MP, Joe & Linda N8DRZ & N8FES, Larry, N9AUG, and Bob, W8ERD.

In addition, I would like to make special recognition to Larry, N9AUG who was the years "Big Hoss" who logged over 500 Q's during the event. -Gary, K8EHB

## DELARA Ham Radio License Class ready to test!

DELARA/ARES has been hosting a Technician license class. We are in the home stretch as the last class and testing session will be held on Saturday, October 15. When we advertised the class, we got a great response; we have 13 students who are all working very hard.

When the Delaware County Emergency Manager would consider putting together a class at the time and have it ready to go, but I needed a host with a simple sentence that said, "Hey Sandy. Of course, the next email that flew back at me was good guys he is (warped sense of humor) and teaching. He was a natural at talking about the great for the students, let's not forget his support your help!

Our 'panel of experts' sit in the back of the room, these are DELARA members who help Craig out as he goes along, they offer extended views on topics that are being discussed. Thanks to W8ERD, K8EHB, N9AUG, N8BHL, K8OMA, W8SMK and W8SJV.



We'll let you know how things turn out at the next DELARA meeting. Cross your fingers and hope for a few new hams!

- Sandy, N8YS

### DELARA is on the Internet!

"Like" the Delaware Amateur Radio Association's Facebook Page! And check out all the features on our DELARA website: <http://www.k8es.org>

### Operating events

- **Illinois QSO Party**  
1700z 10/16 - 0100z 10/17

October 2011

## DELAWARE'S ZOMBIE APOCALYPSE

*Taken from the Delaware County EMA Newsletter, which we suspect Sandy, N8YS, had something to do with.*

- **ARRL School Club Roundup**  
1300z 10/17 – 2400z 10/24
- **ARRL EME Contest**  
0000z 10/22 – 2359z 10/23
- **CQ Worldwide DX SSB**  
0000z 10/29 – 2400z 10/30
- **ARRL Sweepstakes CW**  
2100z 11/5 – 0300z 11/6
- **CQ-WE**  
1900z 11/12 – 0500z 11/14
- **ARRL Sweepstakes SSB**  
2100z 11/19 – 0300z 11/21

## Contribute!

We need your articles, comments and ads!

Newsletter@k8es.org

## Contact Us

clubinfo@k8es.org

elmer@k8es.org

<http://www.k8es.org>

On October 31, Delaware will be invaded by hordes of the undead. The zombies will be part of a hazardous materials exercise, which is being planned through a joint effort of multiple public safety agencies. There also will be a zombie costume contest.

The exercise back-story is that two chemicals will accidentally be spilled and mixed on the Ohio Wesleyan University campus and will turn into a gas. This gas will travel into Selby Stadium where the spectators of a sporting event will be turned into zombies. This may sound more than a little far-fetched, but there is some method to this madness.

On May 16, 2011, the Centers for Disease Control (CDC) posted a piece on its Public Health Matters Blog entitled "Preparedness 101: Zombie Apocalypse". Why on earth would they do this? They did this as a tongue-in-cheek way of encouraging people to discuss the seemingly lackluster topic of personal preparedness. The supplies the CDC recommends for the "Zombie Apocalypse" are the same supplies you would want for any disaster. This blog posting has gained a lot of attention. This is where the idea for the upcoming hazardous materials (HAZMAT) exercise originated.

HAZMAT exercises are akin to personal preparedness in that they unfortunately don't often generate much public interest. For example, it is often very difficult to get volunteers to play victims during exercises. However, when you change the exercise ever so slightly to include zombies, things change; especially when a costume contest is added.

The October 31 exercise will not only test first responders based on normal exercise criteria, but it will also give them realistic numbers of people (Zombies) to more fully test decontamination (decon) and procedures. In previous exercises, 20 to 30 volunteers have been the norm. This time the number may well reach the hundreds. This will push the decon teams much harder. In addition, if a first responder is not wearing appropriate personal protective equipment (PPE) and comes into contact with a zombie, then the first responder will become a zombie, due to cross contamination.



Participating agencies include Delaware County's Fire Departments, Delaware Police Department, Ohio Wesleyan University's Department of Public Safety, Delaware County Sheriff's Office, Grady Memorial Hospital, Delaware County EMS, Delaware General Health District, RACE, **Delaware County Amateur Radio Emergency Services (ARES)** and the Delaware County Office of Homeland Security and Emergency Management (DCOHSEM), and others. Individuals interested in participating should keep an eye on the DCOHSEM Facebook page [www.facebook.com/delcoema](http://www.facebook.com/delcoema) for forthcoming registration information.

There will most likely be a lot of communicating going on- both for the administration of the drill, and participation in it. Mark your calendars and watch for emails outlining where we fit in!  
*Let's see now...is it the silver cross, a silver bullet, or a stake?*





# ARES Happenings

Stan, N8BHL



Much of our public service work is completed for this year. I can't thank you all enough for your participation! Our served agencies were all grateful and impressed with your work. And how much work was that?

Not including the coming Zombie Apocalypse which threatens our peaceful lifestyle in Delaware this Halloween (see accompanying article) ARES members have so far logged **1,860** hours of direct participation in public service activities and projects! These totals include Field Day, projects like the AM transmitters and other activities. Whether you have 2 or 200 hours, the most important thing is you did participate - and that practice and participation makes us ready if an emergency should require our communications abilities. Like a good volunteer fire department, the fact that we have a strong membership means that we can cover events and callouts...we probably won't field the same group of people each time, but we will have the people we need!

AB8KA	100
AC8HN	6
K8EHB	123
K8MP	52
KB8GUM	4
KB8SIA	81
KC8CNT	26
KC8KYR	8
KC8NCU	3
KC8OKB	5
KC8SMI	5
KD8FXS	7
KD8FXV	24
KD8FYA	22
KD8MKI	8
KD8OAD	34
KE7YEP	4
KI0DZ	15
KV8Q	8
N20PW	48

N8BHL	199
N8BSS	77
N8DRZ	23
N8FES	77
N8KKW	6
N8MRU	51
N8OB	1
N8YS	112
N8ZGL	92
N9AUG	110
NR8Q	1
W8CQT	46
W8CR	105
W8ERD	88
W8KTQ	24
W8SJV	71
W8SMK	131
W8VES	25
WB2CWJ	39

Another accomplishment you are all a part of is that Delaware County ARES is highly regarded by our peer groups in neighboring counties, and by the ARRL hierarchy in the Emergency Services field. Not bad, gang! Your performance reflects good things back on our group.

We'll have more to do for the remainder of the year, but every now and again it's good to look back at where we've been!

## Wanted / For Sale

I'm looking for a copy of "Machinery's Handbook". The current edition is the 28th, which I'd love, but I'm interested in any edition so long as it's in good condition. These things are like the CRC or the McMaster-Carr catalog: huge, expensive, and worth their weight in gold. If anyone has one, just contact me at the phone number listed in the DELARA newsletter or at NR8Q@artifexgarage.com

Thanks,  
Ty Williams (NR8Q)  
614-370-3635

FOR SALE: Wouxun KG-UV2D hand held 2M & 440 5W Tx. Full dual band Rx. Already programmed for all local repeaters. With antenna & drop in charger. \$80. Contact Ken, W8SMK

The Below listed items (144Mhz Equip.) for sale. Ready to go 450 Watt, 144 Mhz. rig.

- Yaesu FT-726R, 10 Watt, 50,144 and 432 Bands, AM,FM,CW/SSB. Narrow CW filter. With low-noise external 144 Mhz. pre-amp. Perfect condition. Asking \$500.00
- AM-6154 Amplifier.(modified) 450 Watt output 144 Mhz. Amp. with 8 watts drive. New PA tube (8930) and extra new (in can) spare. Includes all Power supplies ( built-in) and directional couplers (Bird) with meter. Asking \$ 400.00
- Other items, as follows;
  - Signal Generator/Counter, HP8640B
  - Wavetek Sweep Generator, 2001B
  - Tektronic Scope, Model 454
  - Audio Oscilator, HP 200AB
  - Auto. Noise Figure Ind; AIL type 74, with Precision Attenuator Type 30, and Noise Source Type AIL 7010.
  - Standing Wave Ind. HP 415B
  - Impedance Bridge, GR 1650A
  - Military FM Xcver, PRC-25

Getting old and trying to clean house.

Contact;  
Robert Bolden W8SN  
713 Autumn Branch Rd.  
Westerville, Ohio 43081  
Tel. No. 614-890-5717



## "Today is the First Day of the Rest of Joe's Place"

"Holy heck, what does he mean by that?" you're wondering. Well, this edition of Joe's Place is the first one that will *not* appear in "Joe's Place, The Book." (Which will actually be titled *Welcome to Joe's Place*) Thinking about it though, *Joe's Place, the Book* sounds pretty good too.

Why end it in September 2011? Well I had to stop adding articles at some point. If I had my druthers, the book would have been published a long time ago but preparation of the manuscript kept dragging on and on and I just kept adding new articles until finally it's just about ready to go to press. I'm in the final stages of editing the manuscript (for the umpteenth time) and I expect the first copies to ship in about a month.

I poured over the hard copy proof from the publisher and I couldn't believe how many errors I found. The nice lady who is my advisor there said it's always like that. You see things in print that you miss when looking at it on a monitor. I'm sure *Welcome to Joe's Place* readers will find a bunch more. One error made me laugh and I was tempted to leave it as is. I left out a whole word in a sentence in which I was telling my readers that I am confident that they will find some errors as they read, and to please let me know about them.

Besides the Joe's Place articles, the book will have a forward, written by my editor-in-chief, N8OB, an introduction, and a rather comprehensive glossary of Ham Radio terms. I felt the glossary would help non-Ham readers understand the lingo we use.

Here is an excerpt from the introduction that may wet your appetites:

### Introduction

The first Joe's Place article was published in May of 1997. Nearly 3 years passed before Joe's Place became a regular feature in the DELARA News, published monthly by the Delaware Amateur Radio Association of Delaware, Ohio.

Since that first Joe's Place was written, I have learned and re-learned some things. Please read this

work for enjoyment and not as a reference book. (I know, it's hard even for me to believe I ever made a mistake) As you read, keep in mind that most of the articles were just a snap-shot of things happening at the time.

Many of the articles were written tongue-in-cheek (that was my intention, anyway). Hopefully, readers will be able to tell which ones those are. The rest, mostly technical, can be taken seriously but with a dash of salt. I hope you all enjoy reading these stories as much as I enjoyed writing them.

Well, I'm glad the project is nearing completion. I really did (and do) enjoy writing the Joe's Place articles. Putting the book together was a different story. Even though the articles had already been written, it really was hard work.

I hope to see you all at the October meeting. (I think it's Give-away night. If so bring your stuff)

Otherwise, I'll see you in November....

At Joe's Place.

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## 20 / 10 Years Ago in DELARA

**October, 1991-** The club's meeting was a tour of the Voice of America stations at Mason, Oh. Paul Forgrave, K8ES, talked about the new award program for the club.

**October, 2001-** Bob Brown, W8BOB, talked about his first experiences with PSK31, and making his Pegasus understand the mode. The meeting was all about QSL's and the Bureau.

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## Ham News and Calendar

10/15 (12N) Third Tech Class Test at 2PM  
10/23 Sterling Heights, MI Hamfest  
10/29 Ham test, Universal Radio  
10/29 Hazard, KY Hamfest  
11/5 Grant ARC Hamfest, Georgetown, OH  
11/6 Ham test, Marion ARC

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## Read it again, Sam!

Past issues of the DELARA News are now available on the website- <http://www.k8es.org> Newsletters for the year 2010 are on our new "Archives" page! Click and download the .pdf file for reading, local printing or reference. We hope to add more as time permits. Current editions will remain available to members only in our normal monthly distributions. *Be warned- plan to get caught up in reading these!*

# The Voice of Time

Craig Miller, W8CR



As a teenage novice, many hours were spent in my Dad's basement workroom where we set up a bench for my station.

Front and center was the old Hallicrafters shortwave receiver. It's a relic from the 50's, flat black with a classic slide rule dial. Covering 550 kHz to 31 MHz, the dial is labeled with exotic locations around the world like Cairo, Congo, Java and the Vatican.

It didn't have a BFO so wasn't much good for Ham use, but it received great and was usually locked on WWV. I enjoyed listening to that metronome while soldering or reading QST. The timekeeper's voice would come on to announce "At the tone, 11 hours, 27 minutes, Coordinated Universal Time". From hours of listening to the cadence, I developed the ability to count off a minute, second by second, with decent accuracy in my head (sign of insanity?). Tick...tick...tick...

I still have that old receiver, same tubes, still sounds great. Still tuned to WWV, Fort Collins, Colorado. A couple of years ago, it was on while I was in the shack putzing around. Every minute, the man's voice would announce the time or reminding me that he was brought to us by "the National Bureau of Standards", at the top of the hour.

It was getting late and I was thinking about heading to bed, when it happened. The voice changed. Not the clear, punctual, authoritarian, keeper of time, but a raspy, older voice. Not the same one from a minute ago, but it sounded oddly familiar. I really must be getting tired, or maybe it was the signal coming in from different paths bouncing down from the ionosphere that affected the audio.

Another minute ticked by, this time I paid more attention. The voice came back on, sounding tired, not as punctual, barely got the words out before the top-of-the-minute "Beep". I'm positive I heard what I heard. It wasn't some freakish phase shifting or aurora distortion. It was an old man's voice. Again, strangely familiar. Am I going nuts?

This went on 10 or 15 minutes. The voice stammered on a few of the announcements, but still able to make it before the top-of-the-minute tone. I always assumed these announcements were pre-recorded, computer controlled. But these announcements sounded like he was at the microphone (live?). This doesn't make sense.

Then finally, instead of him saying, "At the tone, 4 hours, 59 minutes...", he said, in a very weak, wheezing, breathy voice, "It is.....time.....for me.....to.....go.....(beep)". It was 12 midnight, the usual top-of-the-hour announcement didn't come. Nor did the next minute and the minute after. I stayed up listening for the announcements to start again - they didn't. I could hear in the background the woman's voice from WWVH, Hawaii, making her time pronouncements, but not him. It was very late, I didn't want to but I turned off the old Hallicrafters and went to bed, puzzled, not quite sure what to make of all of this.

\* \* \*

While prepping for this article, I decided to read up on WWV when I found something very interesting: the obituary of the announcer of WWV, Don Heald, passed away February 19, 2009. He was the voice of WWV until 1991 when they changed to another announcer. I now realize that's the voice I remember when I was a kid listening to that ol' Hallicrafters for hours on end back in the 70's. Could it be? Was it him? Did anyone else hear him? Did he come through on other radios or just old radios that had his imprint from decades ago? Was I the only listener that cold winter's night?

I remember now, I'm pretty sure it was February, two years ago when this happened. Was it the 19<sup>th</sup>? Not sure...

(Beware of All Hallows' Eve)



## ARRL Sweepstakes is Coming!

Clubs are always looking for operating events and opportunities that excite and motivate their members to be active, especially on HF. This year's ARRL November Sweepstakes certainly fits the bill and – for the first time in years – the bands will have plenty to offer Technician license-holders, too! Sweepstakes – or “Sweeps” among friends – is a contest in which modest stations can do very, very well. There's no need for giant towers and antennas or legal-limit amplifiers – a backyard dipole or vertical and a “barefoot” HF rig will do just fine. In fact, SS is one contest in which antennas can be too high!

Because Sweepstakes brings out so many US and Canadian operators, it is very popular for friendly “contests within a contest” between clubs and between club members. A club contest to work the most sections, make Worked All States, or ring up the highest score is a nice way to wrap up the season with awards being presented at the year-end meeting. Many clubs have a friendly competition with other nearby clubs for local bragging rights. Even small clubs can get into the action on a national scale in the Local category of the ARRL Affiliated Club Completion.

College clubs can participate in two ways. The first is to submit a score in the School Club category of the main competition. The second is to participate in the Collegiate Championship, sponsored by Ken Harker, WM5R. The website is currently being updated with the 2010 scores and we need some help sorting out the current conference assignment for the record-holders - any volunteers? Finally, for a relaxed “practice” opportunity, try the ARRL's School Club Roundup from Oct 17-21.

Did we mention the opportunities for Technician licensees? Techs have a large chunk of 10 meters available to them on both Phone (28.3-28.5 MHz) and CW (28.0-28.2) but in recent years, there hasn't been much activity due to quiet solar conditions. Lately, the solar flux has been kicking up to 120 and higher, meaning that 10 meters opens up coast-to-coast and beyond! If your club's Techs have been wondering what all the fuss is about 10 meters, be sure to encourage their activity during Sweeps. Perhaps one of those intra-club challenges we were talking about?

If you'd like to know more about Sweepstakes, download the Sweepstakes Operating Guide – there are simple explanations of the rules and a list of resource articles and websites to help you get the most from your Sweepstakes weekend. Maybe you'll even bring home the coveted “Clean Sweep” coffee mug!

CQ Sweeps!

- Larry Hammel, K5OT

## DELARA BYLAWS:

### Considering being a club officer?

#### **ARTICLE III - OFFICERS**

Sec. 1 - The officers of this Association shall be: President, Vice President, Secretary and Treasurer. A single individual may simultaneously hold the offices of Secretary and Treasurer. The officers shall begin their term of office the first day of January following their election.

Sec. 2 - The officers of this Association shall be elected at the Annual Meeting for a term of one year or until their successors are elected.

Sec. 3 - Vacancies occurring between elections may be filled by special elections or may be appointed by the Executive committee.

#### **ARTICLE IV- DUTIES OF OFFICERS**

Sec. 1 - The President shall preside at all meetings of this Association, and conduct the same according to the rules adopted. He/she shall enforce due observance of these Bylaws; decide all questions of order; sign all official documents that are adopted by the Association, and none other; and perform all other customary duties pertaining to the office of President.

Sec. 2 - The Vice-President shall assume all the duties of the President in the absence of the latter.

Sec. 3 - The Secretary shall keep a record of the proceedings of all meetings, keep a roll of members, submit applications for membership, carry on all correspondence, read communications at each meeting, and send written notices to each member. He/she shall at the expiration of his term turn over all items belonging to the Association to his/her successor and perform all other customary duties pertaining to the office of Secretary. It shall be the duty of the Secretary to keep the Bylaws of the Association and have the same with him/her at every meeting. The Secretary shall cause all amendments, changes and additions to be noted thereon and shall permit the same to be consulted by the membership upon request.

Sec. 4 - The Treasurer shall receive and receipt for all monies paid to the Association; the Treasurer shall keep an accurate account of all monies received and expended. He/she shall pay no bills without proper authorization (by the Association or its Executive Committee). At each “regular meeting” he/she shall submit an itemized statement of disbursements and receipts. He/she shall at the expiration of his/her term turn over everything in his/her possession belonging to the Association to his/her successor and perform all other customary duties pertaining to the office of Treasurer. Inventory records shall be maintained by the Treasurer on any property, equipment, or assets owned or acquired by the Association.

# WATT's In That Thing?

What magic lies within the ubiquitous 'slug'?

In a conversation on the .17 one evening, Ken, W8SMK, remarked that one of his wattmeter slugs was found to be in error. That brought up the question (typical of Amateur Radio) of "What's in that thing?" Ken decided to find out. In doing research, John, W8SJV, was able to produce an article by Frederick Glenn, K9SO, that explains it all. It makes for an interesting read- and prods us to repair these things rather than just eBay a new one.

## The Electrical Basics

Two different RF sensing techniques are employed inside the wattmeter slugs. The one most often used at HF and low VHF frequencies will be referred to as a *modified Bruene bridge* approach. The Bruene bridge is named after Warren Bruene (then WØTTK) who originally described the design used by the Collins Radio Corporation in a 1959 *QST* article.<sup>2,3</sup> At higher VHF and UHF frequencies, an approach referred to as a *frequency compensated Monimatch* or simply the Monimatch is used. The Bruene bridge is called a *modified Bruene* here, since the usual realization of this method uses a toroid core to encircle the center conductor of the transmission line.

Since that would not work with a slug approach, the pickup loop in the slug is wound on an external core. Many authors note that the Monimatch design is frequency dependent, but it too can be compensated.<sup>4</sup> The details of the compensation are described in technical papers on directional couplers linked at my Web site, but here it is simply pointed out that the compensation is accomplished in much the same manner as in the Bruene coupler.

In general, the low frequency response is limited by the self-inductance of the pickup loop so the Bruene approach with a pickup wound on a ferrite core is typically used below 60 MHz. The astute reader will see that there is little actual difference between the two circuits after the frequency compensation is applied to the Monimatch approach.

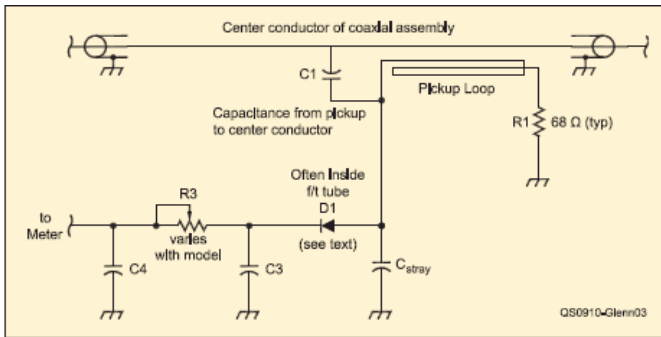


Figure 3 — Basic "Frequency-Compensated Monimatch." C1 provides the frequency compensation. R1 is typically a fixed value resistor.

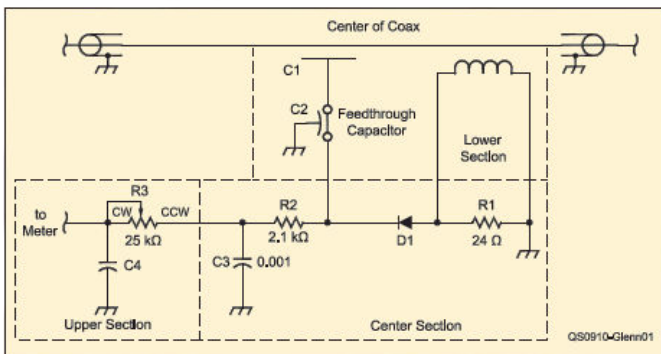


Figure 1 — 2.5 kW HF element schematic. This configuration is predominantly used below 60 MHz. Note that values have changed over the years. These values should be considered typical but are provided for reference only.

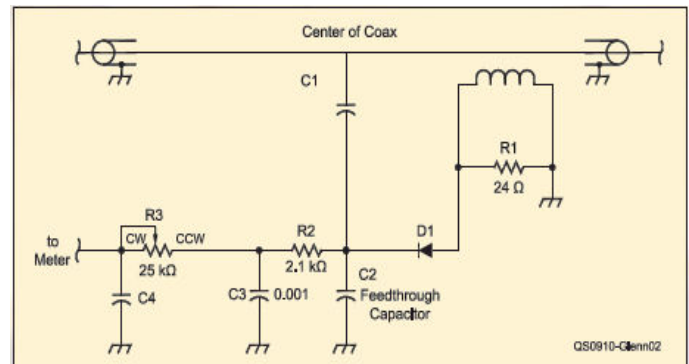


Figure 2 — Bruene bridge schematic. (Figure 1 redrawn...values shown taken from 2.5 kW HF element).

One last electrical comment before going on to the mechanics: It is a misconception to think of the diode as a simple rectifier. At the low excitation levels encountered here, the diode acts neither as a square law detector nor as a rectifier or peak detector. The difference is explained in the author's paper on RF detectors to be found on the K9SO Web site, but if the diode were acting simply as a square law detector, the meter scale would be linear. If it were acting like a peak detector, it would follow a square law (to the second power). In practice, in the design implementation discussed here, it is a little of both and this combination mode of operation is referred to as *mixed mode* by the author. The printed meter scale compensates for the mixed operating modes. Essentially, this can make the diode a critical component to match and track the existing meter scale.

## The Mechanics

The typical Bruene slug configuration is constructed in three mechanical layers here referred to as *upper*, *center* and *lower*. The upper level is accessed by removing the nameplate and then removing the center screw holding an internal cover. The nameplate is glued on, but it can be easily removed without damage after soaking the element upside down overnight in a thin layer of solvent such as MEK. (Solvents such as MEK should be used in a sealed container and with adequate ventilation per the label instructions.)

Removing the white lower cover accesses the lower level. Removing the components on the upper level accesses the center level after removing two more recessed screws. Fortunately, the upper level components operate at dc and are thus not critical with respect to their physical placement. Physical placements of components on the center level are not critical either. Center level components may be replaced and dressed in the original fashion. Figure 4 shows the components of the upper level.

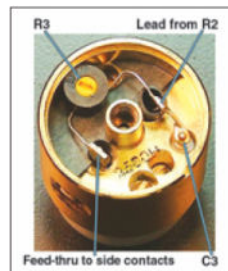


Figure 4 — Photo of upper level (below cover and nameplate) of a 2.5 kW HF element.

Removing the white lower cover accesses the lower section. On some units this can be easily removed by compressing the outer perimeter of the cover at the base using a large diameter string. Compress the bottom by twisting the string. If this is done carefully, the bottom cover can be worked off and later simply pushed back on. If you are removing the cover, be careful not to bump anything inside. Fortunately, even though the lower level houses the most critical components (the inductive and capacitive pickups), these are usually not what goes wrong and there may be no need to remove the lower cover at all to achieve a repair. If for nothing more than completeness, the lower levels of two HF elements are shown in Figures 5 and 6.

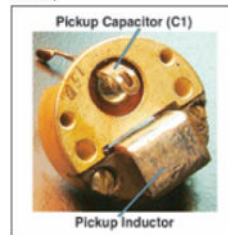


Figure 5 — Lower Bruene pickup level, of a 2.5 kW HF slug.

It is interesting to compare Figures 5 and 6 (2.5 kW and 50 W HF slugs). As might be expected, the size of the pickup capacitor plate and the number of turns on the coil are the only differences. If an element is completely dead, it is not likely that this level even needs to be opened. The problem is likely to be elsewhere. If dropped, however, the inductor leads could conceivably break or the solder connection of the capacitor could break free.



Figure 6 — Photo of a 50 W HF Element lower level showing a similar Bruene pickup.

A coupling plate distorted by mechanical shock would manifest itself as a reduction in element directivity while one that has broken free would surely rattle. The inductor leads can be tested from the center level without removing the bottom cover. Again, neither of these are the most likely points of failure as they are mechanically quite robust. Unsoldering the upper level pot, the noncritical feed through connections, and removing two more recessed screws reveals the center level shown in detail in Figures 7 and 8.

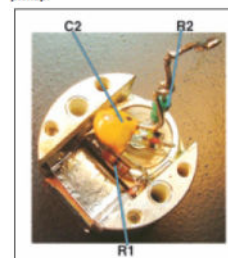


Figure 7 — Center level photo (must unsolder upper level connections and remove two screws).

Finally, Figure 9 shows the lower level of a Monimatch 100 W UHF element. The higher frequency VHF and UHF pickups vary widely since the Monimatch design depends on the capacitance of the pickup loop wire to the center conductor of the transmission line. In this design, the pickup wire is doubled to increase that capacitance. The pickup also functions as the inductive coupling (M). Obviously, the dielectric of the cover comes into play here as well as in the Bruene design.



Figure 8 — Additional center level view.

If the Monimatch designs have lost directivity, look at the value of the terminating resistor on the lower level. In the earlier designs that the author has seen, these were carbon composition resistors. Although good performing resistors at RF frequencies, they are prone to drift in value (usually upward) with time. This particular resistor is color-coded at 68  $\Omega$  but was measured to be 75  $\Omega$ . Directivity of the coupler is critically dependent on this value. Since drift is usually toward a higher value, an added parallel resistor (being careful not to change the capacitance) may be a good solution. Theoretically, adjusting the spacing of the pickup can also restore balance, but this is not recommended. Directivity is important for maintaining forward/reverse power accuracies with mismatched loads and should not be overlooked. By specification, the watt-meter elements only achieve a minimum 25 dB directivity factor and typically are no better than 30 dB. Most lab quality instruments are >40 dB.

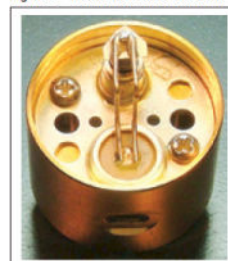


Figure 9 — 100 W UHF slug with "Monimatch" pickup.

### In Summary

The most likely failures the author has seen are related to components on the upper and center levels. These components are easily accessed and repaired. They are also mostly operated at dc so the physical placement and lead dressing are not critical to performance or accuracy. Most replacement components are easily found and are not critical (with the possible exception of the diode). The reader is cautioned that these elements have been produced for many years and this article does not represent all of the variations used over the years. An understanding of the operation of the individual components should allow most repairs, since the underlying theory has not changed.

A common failure is the adjustment potentiometer. Good results have been reported by replacing the diodes with germanium parts (getting hard to find) or even Schottky diodes but the author has not verified this. Remember that the diode is a critical component to track the printed meter scale as the diode acts in mixed mode rather than either as a square law or peak detector. Small wattage carbon composition resistors, as used in these designs, are still available and will likely last another 20 years or so. Following the repair, recalibration is as simple as adjusting the series potentiometer to an element of known accuracy. Be sure to replace the bottom cover before calibration if it was removed, as the dielectric will affect the value of the parasitic capacitance. Reassemble and glue the cover plate back on and you've just saved yourself a lot of money.

Special thanks to Jeff Whalin, KC9JOB, who helped develop the methods used to open up these elements without damage.

#### Notes

1 [www.k9so.net](http://www.k9so.net).

2W. Bruene, WØTTK, "An Inside Picture of Directional Couplers," *QST*, Apr 1959, pp 24-27.

3See especially ZL1AN's excellent and detailed technical analysis of the Bruene bridge on [www.k9so.net](http://www.k9so.net).

4See Note 2.

5F. Glenn, K9SO, "Analysis of a Portable Wattmeter," posted at [www.k9so.net](http://www.k9so.net).

6F. Glenn, K9SO, "Square Law Detectors," posted on [www.k9so.net](http://www.k9so.net).

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*ARRL Life Member Frederick Glenn, K9SO, is an Amateur Extra class licensee first licensed in 1964 as WN9MVZ. He holds BS and MS degrees in Electrical Engineering and has previously had articles published in QEX. Frederick is currently President of Glentek Corporation of Hoffman Estates, Illinois. You can reach Frederick at 320 Castlewood Ct, Hoffman Estates, IL 60067-4714 or at [k9so@arrl.net](mailto:k9so@arrl.net).*

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## DX Code of Conduct Update - October 2011



We have made encouraging progress on almost every front. Over 20,700 hams have visited our site and there is strong representation from hams in countries all around the world. One of our main objectives was to have this be a true international movement. Take a look at the Flag Counter on our main page and click on it to see more statistics.

You may be surprised to see how much support there has been from some countries where the number of supporters is well out of proportion to their population. This is due mostly to small number of hams in those countries who have dedicated themselves to spreading the word about the merits of improving behavior among their compatriots. You can do the same within your country too.

Another feature that shows this also is the rotating globe from Revolver Maps. This shows previous log-ins but will also highlight your QTH when you are at the page. Click on the globe for more detail.

The support of DXpeditions has been very encouraging. Of course, those operators are the major beneficiaries of ethical operating behavior. I have been listening to T32C and 3D2R and the pileups seem quite well-controlled compared with stories I heard about STOR. That said, I would like someday to understand why, when the DX station

asks, "M0?" someone whose call is K4XXX continues to call. There is no way the DX can hear him if he is listening to someone else!

Take a look at [www.T32C.com](http://www.T32C.com) where we are featured on the main page and on [http://www.t32c.com/How\\_to\\_Work\\_T32C](http://www.t32c.com/How_to_Work_T32C) That kind of prominent notice does a great job in telling DXers that the DXpedition thinks the Code is important and that DXers need to adhere to the Code to better their chances for a contact. Almost every DXpedition is showing their support with a logo and a link.

A major thrust for 2011 that you can help with is to get the support of your country's national society. The new page,

<http://dx-code.org/national.html>

shows societies like RSGB and DARC that are pushing the project in their countries. There are others that are listed, although a few have supported us in the past but I cannot now find a link.

Please take a minute to think about how you can get your country's society to support the project, put the logo up at their website, tell their members about it, perhaps through an article in your society's magazine or newsletter. You can also help by putting the logo on your webpage and on your QSL card the next time you print some. We'd like our logo to be EVERYWHERE so that it will be impossible to miss and so every ham will learn about it.

On behalf of our Committee, I would like to thank you for the hundreds of e-mails I have received expressing the support of the Code project. You can

## 10 Meters is HOT!

-From the ARRL Letter

For the past few days, the solar flux has been hovering around 130. While this is down from a peak of 190 -- the highest we've seen in Solar Cycle 24 -- just 11 days ago, the higher HF bands are definitely feeling the effect. Higher solar flux levels can mean higher sunspot levels and this is good news for radio amateurs, especially Technicians. The 10 meter band is the only HF band where Techs have phone privileges. "Techs can get use their voice privileges from 28.300-28.500 MHz," explained W1AW Station Manager Joe Carcia, NJ1Q. "If you don't have your own HF rig, find someone in your local radio club who does or call your Elmer. Without a doubt, you don't want to miss this opening. Who knows how long it will last or when it will come back? So get on the air while you can and experience the magic of 10 meters." The solar flux is predicted to hit 140 on October 12 and stay at that level for almost a week.

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## Remember that TNC?

-Might be time to dust it off!

I was graciously invited to participate in a seminar at Universal last month with a "So I've got my license...now what?" theme. One of the speakers was Matt Mitchell, KB8UVN, from Columbus. Matt is working on giving new life to a dusty transmission mode: packet. I was not involved with packet then, but I remember well the glowing reports of sending messages down the eastern seaboard network to arrive in a couple hours. Problem was- I could email instantly. Not to be mean, but the most frequent use devolved into dx spots and checking your connect logs.

Things may have changed. Today, the approach is not just working the mode, but rather what you can do on the "packet network" -- regarding it as a network topology. Yup, it's still slow but it can be nearly universal- and Matt is working to put in place a well-saturated Ohio network. Check his website at

<http://www.ohiopacket.org>.

After the session, Matt and I talked about emergency applications -- such as being able to access Winlink and send regular emails from the "last mile" in a disaster area. It wouldn't matter that local Internet access were down- it could be accessed through the network. I, of course, am interested in emergency applications. While Gary, K8EHB, works on digital transfer with ARES D-Star radios, I see the potential of a robust packet network as another avenue for

feel good about the worldwide enthusiasm for a project with such high ethical goals. Keep spreading the word.  
- Randy W6SJ

emergency file transmission. The nicest thing about packet is- there are a lot of hams who have a TNC which could be put back into operation.

We are going to use the empty top of one of my towers for the installation of what I call a packet repeater station- it will have Internet capabilities and a fairly good signal pattern. What's more, Matt will be installing a dedicated packet station inside "Canned Ham" to be there for emergency and routine file-sharing, email, and other services when "Canned" is on location for public service or emergency events.

So especially if you're in ARES (and if you're not we'd love to have you!) you might poke around some afternoon and see if you can get that packet rig back together! It could be the last-ditched link to the "last mile" right when we need it!  
- Stan, N8BHL

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Slide tab X into slot D, tighten loosely using the proper set screw 22, hold for 14 minutes before moving on.

Word on the repeaters is that Bob, W8ERD, can be found standing amongst piles of tubing, hardware and gadgets as he figures out what the instructions for his new SteppIR beam are *really* trying to say. Bob will share his project with us as part of our DELARA meeting this month!

I thought of Bob when reading this note from KB3OGD, quoted by KB6NU, about installation instructions for a brand of TV antenna. They are as follows:

**"WARNING Do not attempt to install if drunk, pregnant, or both. Do not throw antenna at spouse."**

I suppose that condition number three would require condition number one, and eliminate the possibility of condition number two.

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## Tm2Bup2dt

John Perone, W8RXX, supplies us with this list of cellphone texting abbreviations that are appropriate for, shall we say, our more common age group.

ATD: At The Doctor's  
BFF: Best Friend Fainted  
BTW: Bring The Wheelchair  
BYOT: Bring Your Own Teeth  
CBM: Covered By Medicare

CGU: Can't get up  
CUATSC: See You At The Senior Center  
DWI: Driving While Incontinent  
FWB: Friend With Beta Blockers  
FWIW: Forgot Where I Was  
FYI: Found Your Insulin  
GGLKI: Gotta Go Laxative Kicking In  
GGPBL: Gotta Go Pacemaker Battery Low!  
LMDO: Laughing My Dentures Out

LWO: Lawrence Welk's On  
ROFL... CGU: Rolling On The Floor Laughing... And Can't  
Get Up  
TTYL: Talk To You Louder  
WAITT: Who Am I Talking To?  
WTP: Where's The Prunes?