



# ARC OVER

The Official Newsletter of the Fox River Radio League  
Since 1924

Our 91st Year in Amateur Radio!



August 2015

## PLAY ARRL AUDIO NEWS OVER YOUR REPEATER

David Holdeman N9XU



Proud to be an ARRL  
Special Services Club

### The Past

Back in the days of DOS 5 and Windows 3.1, I became Network Control Manager of the Schaumburg, IL 2 meter Thursday night net where my job was to assign network control operators and increase the number of “check ins.”

I think those days were somewhat like today. Young hams were becoming enamored with the new personal computers which were becoming available, while today iPads and iPhones similarly contribute to declining network attendance.

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One of the club members regularly taped “Newslines,” a ham audio column which originates from the west coast. The tapes were entertaining and I thought that if they could be played over the repeater, the number of check-ins would increase. I borrowed his tape recorder and played one of his tapes by holding my microphone close to the tape recorder’s speaker. It worked, but holding the microphone button down while holding the microphone close to the recorder’s speaker became old hat in short order. What I needed was my own tape recorder/player and a method of interfacing it to the microphone input jack of my Alinco DR130 transceiver.

### What I Found

I found an interesting reel to reel tape recorder at a “Goodwill” store. It was a tube type unit with a weird microphone that had all sorts of control buttons on it. The microphone cord terminated into 3 color coded DIN plugs which plugged into matching color coded sockets on the recorder. The recorder was in good shape, but the microphone cord was badly frayed and the microphone case was cracked and some of the buttons on it were inoperable.

## About the FRRL

The Fox River Radio League, Inc., is a general interest amateur radio club serving the central Fox River Valley area. Records indicate the club has been in existence since at least 1924, and has functioned continuously ever since. We are an ARRL Special Service Club, an Illinois not-for-profit corporation, and a 501(c)(3) tax exempt organization as specified in Federal IRS Statutes. We sponsor training classes for new hams, license examination sessions, an annual hamfest, and participate in various public service events. If you have a specialized amateur radio interest, chances are you can share it with one or more of our club members.

The Fox River Radio League meets on the 2nd Tuesday of every month at Bethany Lutheran Church at 8 S. Lincoln St in Batavia.. The meeting begins at 7:30 PM and includes a business portion, social time and a program of interest.

All persons interested in amateur radio are invited to attend. Families are welcome.

Please welcome our newest members to the club!

Call	Name	License Class
KC9VST	Martin Barson	Technician
No Call Yet!	Jim Rittenhouse	No Call Yet!

## ArcOver FRRL Newsletter

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The ArcOver is published monthly by the Fox River Radio League, Inc. Articles and letters are always welcome. The normal deadline for material is the 25th day of each month for the next month's news letter. Articles can be sent by email to: [arcover@frrl.org](mailto:arcover@frrl.org) or via U.S. Mail to: FRRL Newsletter PO Box 673 Batavia, IL 60510.

Contact the Editor for details and submission guidelines.

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**Fox River Radio League**  
Founded 1924

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Annual dues are payable no later than the January Club Meeting each year. New members joining during the year will have their first year's dues prorated to the nearest yearly quarter.

Regular dues are \$25.00 a year, Senior Citizen dues are \$15.00. Family dues are \$35.00. Members can help support the FRRL Repeaters by making an annual \$10.00 donation.

# Bill Erikson HF Challenge

By Dawn Williams, KC9LQS

Reporting was down last month among Challenge participants. According to Larry K9ARZ, band conditions continue to be difficult, which might account for lower than usual activity. Despite this, Larry K9ARZ worked Saint Pierre and Miquelon; Svalbard; Faroe Isl., Oman, Tajikistan, Albania, Vatican, Thailand, Kyrgyzstan, South Cook Isl., Kenya, Cameroon, Gabon, United Arab Emirates, and Market Reef.

"I also worked the K2A-L Fourth of July Special Event stations and made a 'clean sweep' working all 13 (colony) states, and associated special event stations in Philadelphia (WM3PEN) and England (GB13COL) all on the same day (July 1st)," he said. "It was a lot of fun, and I already received the certificate in the mail for working the event."

Also reporting in last month, Roger W9YU, Jason NX9Y, and Joe NA9A enjoyed modest gains. Joe logged a QSO with the rare Timor-Leste, a southeast Asian island which became the first new sovereign state of the 21st century.

With the club's major summer activities behind, and band conditions permitting, we're hoping to see more on-the-air activity in future Challenge updates. Are you in? It isn't too late to jump into this year's Challenge. See Joe NA9A at the next club meeting, or send an email to Challenge [at] FRRL.org for more information or to receive a Challenge worksheet.

73 de KC9LQS

Limited Class	States	Provinces	DX Countries	Total
Paul W9JML	41	6	24	71
Paul KC9SEB	38	4	11	53
Operator Class	States	Provinces	DX Countries	Total
Roger W9YU	68	11	86	165
Herb W9DTR	48	10	48	106
Dan WA9YKK	21	1	65	87
Jeff N9JZN	3	1	64	68
Jason NX9Y	29	2	32	63
Dawn KC9LQS	0	0	53	53
Bill NF9D	27	1	2	30
QRO Class	States	Provinces	DX Countries	Total
Larry K9ARZ	79	24	331	434
Joe NA9A	52	15	209	276
Dick AH6EZ/W7	50	11	177	238
Cedric WT2P	50	5	90	145
Alan W9AN	22	3	78	103
Dean KC9EOQ	28	5	46	79
Marty N9NTM	2	0	38	40
Rag Chewer Class	States	Provinces	DX Countries	Total
Dick AH6EZ/W7	35	1	6	42
Herb W9DTR	13	3	6	22
Jason NX9Y	18	0	1	19
Joe NA9A	9	0	1	10
Paul W9JML	2	0	1	3

**STUDY QUESTIONS  
OF THE MONTH  
FROM THE TECHNICIAN POOL**

**Q:** T1C06 [97.5(a)(2)]

From which of the following may an FCC-licensed amateur station transmit, in addition to places where the FCC regulates communications?

- A. From within any country that belongs to the International Telecommunications Union
- B. From within any country that is a member of the United Nations
- C. From anywhere within in ITU Regions 2 and 3
- D. From any vessel or craft located in international waters and documented or registered in the United States

**FROM THE GENERAL POOL**

**Q:** G1B01 [97.15(a)]

What is the maximum height above ground to which an antenna structure may be erected without requiring notification to the FAA and registration with the FCC, provided it is not at or near a public use airport?

- A. 50 feet
- B. 100 feet
- C. 200 feet
- D. 300 feet

**FROM THE EXTRA POOL**

**Q:** E1F01 [97.305]

On what frequencies are spread spectrum transmissions permitted?

- A. Only on amateur frequencies above 50 MHz
- B. Only on amateur frequencies above 222 MHz
- C. Only on amateur frequencies above 420 MHz
- D. Only on amateur frequencies above 144 MHz

The Amateur Radio vanity call sign regulatory fee is set to disappear in the next few weeks. According to the best-available information from FCC sources, the first day that applicants will be able to file a vanity application without having to pay a fee is Thursday, September 3. In [deciding](#) earlier this year to drop the regulatory fee for Amateur Radio vanity call signs and General Mobile Radio Service (GMRS) applications, the FCC said it was doing so to save money and personnel resources. The Commission asserted that it costs more of both to process the regulatory fees and issue refunds than the amount of the regulatory fee payment.

"Our costs have increased over time, and now that the costs exceed the amount of the regulatory fee, the increased relative administrative cost supports eliminating this regulatory fee category," the FCC said in its [Report and Order](#), which appeared on July 21 in *The Federal Register*. "Once [it's] eliminated, these licensees will no longer be financially burdened with such payments, and the Commission will no longer incur these administrative costs that exceed the fee payments."

In 2014 the FCC raised the Amateur Service vanity call sign regulatory fee from \$16.10 to its current \$21.40 for the 10-year license term. The \$5.30 increase was the largest such fee hike in many years. In a typical fiscal year, the FCC collected on the order of \$250,000 in vanity call sign regulatory fees.

The FCC said the revenue it would otherwise have collected from such regulatory fees "will be proportionally assessed on other wireless fee categories." Congress has mandated that the FCC collect nearly \$340 million in regulatory fees from all services in fiscal year 2015.

**New, User-Friendly VOACAP Propagation Planner Debuts:** A revamped online service, [VOACAP Propagation Planner](#), a comprehensive, free-of-charge planning tool for HF contesters and DXers, is now available. The more user-friendly beta version 2.0 does all the heavy lifting and number crunching on the VOACAP server and displays the results graphically by CQ or ITU zones (short-path or long-path) and by band-specific zone charts (also short-path or long-path). Tables can easily be copied into word processing software. [More information](#) is available at The Official VOACAP Blog. -- *Thanks to Jari Perkiömäki, OH6BG*

	12M	SP	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
01 KL7																										
02 VO2																										
03 VE7																										
03 W6																										
04 W0																										
04 W5																										
05 W1																										
05 W4																										
06 XE																										
07 TI																										
08 KP4																										
09 8R																										
10 OA																										

## President's Traffic

Dawn Williams, KC9LQS

A friend and fellow club member mentioned how excited I seemed about everything I presented at last month's meeting. I was glad to know my enthusiasm showed. Like many of you, I find that much of my free time and many of my friendships are rooted in FRRL. We are fortunate to be part of such an active, involved group, and I hope all of you are as excited about what we do as I am.

Supporting friendship among like-minded people is both a goal and a benefit of radio clubs like ours. At our August meeting, we've planned another opportunity for you to catch up with old friends in the club, and perhaps become friends with some of our newer members. We're having a potluck social hour in place of a program this month, and I hope many of you will take advantage of this opportunity. By request, I'm bringing my popular Taco Bean Soup (credit due to Jeff N9JZN's mom, Lois, from whom I adapted the recipe). Each of you, if you are so inclined, are asked to bring a dish to pass as well – main dish, side dish or dessert, anything is welcome. Please email me at President [at] FRRL.org to let me know what your contribution will be. As always, beverages will be provided.

We're still hoping someone will step up to coordinate an autumn activity, be it a radio in the park event, a fox hunt, or perhaps a group operating activity during the Illinois QSO party. Coordinating an event means choosing a location and a date, assigning specific responsibilities to a few good volunteers, and ensuring that all the details are in place. Please contact me or one of your board members if you're the person we're looking for. Autumn events are especially enjoyable; with the busiest part of the season behind us, we can relax and focus on both the operating activity as well as the camaraderie, and the weather is generally much milder than what we experience during Field Day and Hamfest!

Speaking of Hamfest, I want to thank the many volunteers who helped with set up, worked the gate, and stayed after the event to clean up and help vendors load their wares before we all headed home. This year's seminar leaders also deserve a shout out for presenting good information on a wide range of topics; thanks to John AG9D who presented an AMSAT update; Mike K9FE whose Digital Made Easy seminar drew a full house; Jeff N9JZN who discussed how to consider the numerous factors that affect your choice of tower and antennas; Phil W9XAN for his discussion of modular 12-volt power connectors; Tobi K9TCD who offered tips on working better DX by having the right equipment and using it well; and John KC9OJV for his discussion and demonstration of Hermes Lite.

In the three years that I have served as Hamfest Chair – and for that matter, as I end my second term serving as president – I have experienced the powerful difference that dedicated members can make in an organization. All of you have my gratitude for your contributions.

I'm looking forward to seeing you at our potluck event this month. Until then,

73 de KC9LQS



# August Contest Dates

+ Intercontinental Lighthouse-Lightship Weekend Contest	0001Z, Aug 1 to 2359Z, Aug 2
+ 10-10 Int. Summer Contest, SSB	0001Z, Aug 1 to 2359Z, Aug 2
+ European HF Championship	1200Z-2359Z, Aug 1
+ North American QSO Party, CW	1800Z, Aug 1 to 0559Z, Aug 2
+ ARRL August UHF Contest	1800Z, Aug 1 to 1800Z, Aug 2
+ SARL HF Phone Contest	1300Z-1630Z, Aug 2
+ Phone Fray	0230Z-0300Z, Aug 5
+ WAE DX Contest, CW	0000Z, Aug 8 to 2359Z, Aug 9
+ Maryland-DC QSO Party	1600Z, Aug 8 to 0400Z, Aug 9 and 1600Z-2400Z, Aug 9
+ 50 MHz Fall Sprint	2300Z, Aug 8 to 0300Z, Aug 9
+ NAQCC CW Sprint	0030Z-0230Z, Aug 12
+ Phone Fray	0230Z-0300Z, Aug 12
+ RSGB 80m Club Sprint, CW	1900Z-2000Z, Aug 12
+ Keyman's Club of Japan Contest	1200Z, Aug 15 to 1200Z, Aug 16
+ North American QSO Party, SSB	1800Z, Aug 15 to 0559Z, Aug 16
+ ARRL Rookie Roundup, RTTY	1800Z-2359Z, Aug 16
+ Phone Fray	0230Z-0300Z, Aug 19
+ Hawaii QSO Party	0400Z, Aug 22 to 0400Z, Aug 24
+ Ohio QSO Party	1600Z, Aug 22 to 0400Z, Aug 23
+ CVA DX Contest, SSB	2100Z, Aug 22 to 2100Z, Aug 23
+ Phone Fray	0230Z-0300Z, Aug 26
+ RSGB 80m Club Sprint, SSB	1900Z-2000Z, Aug 27
+ YO DX HF Contest	1200Z, Aug 29 to 1200Z, Aug 30
+ W/VE Islands QSO Party	1200Z, Aug 29 to 0300Z, Aug 30
+ Kansas QSO Party	1400Z, Aug 29 to 0200Z, Aug 30 and 1400Z-2000Z, Aug 30
+ North American SSB Sprint Contest	0000Z-0400Z, Aug 30

## UPCOMING EVENTS

### Board of Director's Meeting

August 4, 2015 @7:30pm  
Colonial Café—Aurora, IL

### Membership Meeting

August 11, 2015 @7:30pm  
Bethany Lutheran Church

### VE Testing Session

July 12, 2015 @ FRRL Ham-fest

Technician Pool- D. From any vessel or craft located in international waters and documented or registered in the United States

General Pool- C. 200 feet

Extra Pool- B. Only on amateur frequencies above 222 MHz



**Fox River Radio League**  
**"Established 1924"**  
**An ARRL Special Service Club**  
**W9CEQ PO Box 673 Batavia, IL 60510**



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Minutes of the Regular Meeting of the General Membership of the  
Fox River Radio League (FRRL) an Illinois not-for-profit Corporation  
Held at Bethany Lutheran Church, Batavia, IL

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### **Meeting Minutes July 14, 2015**

The meeting was called to order at 19:30 by president Dawn Williams KC9LQS with 45 members signed in.

#### **Question of the Month – Introductions**

First time visitor? Newly licensed? Recently upgraded? Let us know.

A call was made to sign the book.

#### **Reports**

##### **Minutes of May12, 2015 Regular Meeting**

A motion was made by Jack, K9JE and seconded by Joe, NA9A to approve the minutes as published. Motion carried

**Treasurer** – Dean KC9EOQ reported the account balances as of June 30, 2015:

**Program** – Jason announced that the program would be about the history of Ham Radio by Larry, K9ARZ. Next month a social hour has been planned to take the place of our usual program.

**NET** – Dave, N9XU reminded us again that the net needed an operator. Dave will be going to Oshkosh for some time.

#### **Old Business**

**Field Day Wrap up** – Phil, W9XAN gave a big thank you to all who made Field Day successful. See the FRRL website for details and pictures. I think it would be sufficient here to say that everybody who participated smiled for a week.

**The Prelude – Publicity** – Dawn, KC9LQS did some public relations work for the club for ham radio and Field Day.

There is a display at the Batavia Public Library from June 1<sup>st</sup> to 28<sup>th</sup>.

Mayoral proclamations were issued by the City of Batavia and the Village of Elburn.

Our press release appeared in the Daily Herald, along with a link to the video on our website.

#### **New Business**

**Boy Scout Jamborall** – The Boy Scouts have a new name for their Jamboree, it's Jamborall. It will be Oct. 2 – 4. Dawn would like us to get together to give them a real life ham radio experience. Contact Dawn if interested. The location is Sandwich Fairgrounds.

**Possible Fall Activity** – There's been talk of a fall activity. A coordinator would be needed. A possible Fox Hunt was brought up. Interested? Speak up.

Minutes of the Regular Meeting of the General Membership of the  
Fox River Radio League (FRRL) an Illinois not-for-profit Corporation (**cont'd**)

**Farmer's Market** – Dawn, KC9LQS informed us that the first Farmer's Market will be June 19<sup>th</sup> in St. Charles from 8 am to 1 pm. It's located on Fourth Ave. and Main St., adjacent to Baker memorial Church.

**Announcements**

**Hamfest –**

We will have a wrap up presentation next month.  
Final ticket payments accepted tonight.

**Announcements from the floor**

The repeater failed because the power supply went out. Everything has been fixed and the repeater is up and running.  
Marty, N9NTM announced an activity at the Will County Fairgrounds.

**Upcoming events**

July 25<sup>th</sup>, Batavia Farmer's Market. 8 am to noon on Water Street, between Wilson and State.  
August 4<sup>th</sup>, BOD meeting  
August 11<sup>th</sup>, Membership meeting  
August 29<sup>th</sup>, Aurora Farmer's Market

**Adjournment**

The motion was made by Denny, W9HI and seconded by Jim, N9XP to adjourn the meeting at 20:11.  
The motion carried.

Respectfully submitted,  
Jack Tofari KD9CPN



Save the date for 2015

Friday-Saturday  
September 11-12, 2015  
HYATT REGENCY SCHAUMBURG  
1800 East Golf Road  
Schaumburg IL 60173  
Across from Woodfield Mall  
HOTEL RESERVATIONS NOW OPEN

[www.w9dxcc.com](http://www.w9dxcc.com)

## IMPORTANT AMATEUR RADIO WEB PAGE LINKS

[www.frri.org](http://www.frri.org)  
[www.arrl.org](http://www.arrl.org)  
[www.colpage.org](http://www.colpage.org)  
[www.qrz.com](http://www.qrz.com)  
[www.dailydx.com](http://www.dailydx.com)  
[www.twit.tv/hn](http://www.twit.tv/hn)  
[www.dxspots.com](http://www.dxspots.com)



### FRRL Repeaters:

W9CEQ—147.210 MHz +600KHz Offset, 103.5 PL

W9CEQ—444.300 MHz +5 MHz Offset, 114.8 PL (IRLP Node # 4850) (Echolink # 230933)

**FRRL Digital Voice/Data Repeaters:** (Contact Kermit, W9XA for information)

W9CEQ\_\_B D-Star—442.10625 MHz (+ 5.0 MHz offset)

W9CEQ\_\_C D-Star—147.225 MHz (+ 0.6 MHz offset)

### Other Local Area Repeaters:

Owned by Kane County OEM:

KC9OEM—145.470 MHz -600 KHz, 103.5 PL

(2 meter is primary Kane Co. SKYWARN/ARES Frequency)

W9DWP—Kane Co. Amateur Public Svc. Repeaters:

(Both repeaters are dual mode APCO-25 NAC-293)

145.270 -600 KHz 107.2 PL

443.025 +5 MHz 114.8 PL

Local 6 meter: Input: 52.210 Output: 53.910 Carrier Access FM (W9XA 6-meter repeater)

W9ZGP—NIARC:

147.060 +600 KHz, 103.5 PL

### Weekly Nets:

Ten Meter Net: Monday at 8:00pm 28.150 MHz CW

Monday at 8:30pm 28.720 MHz SSB

FRRL 2 Meter Net: Tuesday Evening at 7:30 pm

ARES & Skywarn Net: Wednesday Evening at 6:30 pm on the KC9OEM 2 meter repeater

Illinois DStar Net - Wednesday Eve. at 8:00 pm on the DStar 2 meter repeater

## PLAY ARRL AUDIO NEWS OVER YOUR REPEATER (cont'd)

David Holdeman N9XU

The whole unit was dark gray, German made, and measured about 12 inches square and 3 inches high. I borrowed a tube tester and replaced several weak tubes with their American equivalents. After that, by judicious use of an ohmmeter and magnifying glass, I was able to discern the control and microphone circuitry and build a control box with a microphone jack and 2 toggle switches which duplicated the functions of the buttons on the defunct microphone. They were record, play, rewind and fast forward. An old dynamic microphone from my junk box completed this portion of my project.

### The Old Interface Design

I had recently retired from the Chicago engineering office of AT&T Communications, and while there, I copied an article in the Bell Telephone Laboratories Record on designing split pads for 600 ohm telephone circuits. These pads had a low loss input, a high loss input and a common output. A typical pad is shown in **Figure 1**.

The accompanying **Table 1** shows values for various losses at 600 ohms. If your impedance requirements are other than 600 ohms, resistance values for R1, R2 and R3 can be computed using formulas in the handbook, while R4 can be determined proportionally. My Alinco had a 2000 ohm microphone impedance so I designed a pad to match. The microphone was connected to the through path (low loss) and the 8 ohm output of the tape recorder fed the bridged path (high loss) through an 8 ohm to 2000 ohm matching transformer and an attenuator. I added the bridging circuitry and a push to talk toggle switch to my tape recorder control box, built a control box to Alinco audio cable and went on the air with Newsline. That arrangement worked very well and the audio sounded great. I eventually replaced the reel to reel recorder with a small cassette recorder for greater convenience and to save shack space.

**Table 1**

Typical Split Pad Values @ 600 Ohms (From Bell Labs Record Article)

Thru Path	Bridged Path				
Loss (DB)	Loss (DB)	R1	R2	R3	R4
4.4	11.3	150	750	150	130
0.6	30.0	20	10K	20	680
1.7	20.0	56	2.7K	56	750
0.5	30.0	20	10K	20	620
6.0	6.0	200	200	200	None
0.9	26.0	30	5.6K	30	680
0.5	32.0	15	12K	15	620
0.3	35.0	10	15K	10	620
1.0	25.0	33	5.1K	33	680
0.6	29.0	20	8.2K	20	680



Figure 1

## PLAY ARRL AUDIO NEWS OVER YOUR REPEATER (cont'd)

David Holdeman N9XU

### The Present (about 25 years later)

I moved away from the Schaumburg area and joined the FRRL (Fox River Radio League) club of Aurora, IL and volunteered my services as Network Control Manager once again.

I noticed that net participation was down from previous years and I wondered if playing ham news over the FRRL repeater would increase interest. One of my friends mentioned that the ARRL Audio News was available for downloading in MP-3 format, so I called Sean Kutzko KX9X of the ARRL and downloaded the latest audio file. Sean was very helpful and gave me all the information I needed. I decided to build an interface using my old split pad arrangement and substituting a computer in place of a tape recorder. My old Alinco D130 is no longer around, but I have an old Yaesu 212 that has the same microphone input impedance and an old HP 900 Mhz desktop computer with the Windows XP operating system.

### The New Interface Design (Figure 2)

Luckily I had the old design squirreled away, so I didn't have to reinvent the wheel so to speak. I noticed that the ARRL Audio News was stereo, so that enabled me to include a level monitor into the interface using half the stereo signal to drive the level meter. The PTT switch is a DPST switch that has one set of contacts open and one set closed. In the off position, contacts 1 and 2 are closed completing the electret microphone voltage path from the microphone to the transceiver and allowing normal voice operation.



Figure 2

When the PTT switch is thrown, contacts 1 and 2 are open, disabling the mic while 3 and 4 are closed operating the PTT line to the transceiver.

## **PLAY ARRL AUDIO NEWS OVER YOUR REPEATER (cont'd)**

**David Holdeman N9XU**

### **Construction**

I have included a pair of amplified stereo speakers between the computer sound card output and the interface input. These are optional, but are handy to have as a quick audio check. The stereo speakers are silenced as soon as the stereo Y plug is inserted into the headphone jack on one of the stereo speakers, but the volume control on the speakers still works and can be used as a variable attenuator. The Stereo Y at the output of the speakers is built into the patch cord and connects to the left and right channel inputs on the interface. The left and right channel input jacks are RCA phono jacks. T1 and T2 are 70V audio line transformers connected backwards. Fry Electronics MT2570 or Radio Shack 32-1031B work well. It is good engineering practice to use shielded leads on the audio circuits, but I have not found the need to do that as the audio leads are quite short. I have also not added any bypass capacitors as the signal out of our repeater seems to be clean when playing the ARRL audio news. The rect. is a low voltage bridge rectifier module and C1 is a 220 ufd 35 volt electrolytic capacitor. R8 is a 10 K ohm audio taper potentiometer and M1 has a 0-200 uA movement. Front and rear views of the completed unit are shown in photos 1 and 2.

### **Initial Set-Up**

With your radio transceiver off, unplug the Y cord from the stereo speakers and set the stereo speaker volume knob at mid range. Use the computer media program to launch audio news and set the stereo speaker volume knob at a comfortable level. Plug the stereo Y cord into the stereo speakers. Audio news will go silent, but you should see an indication on the audio interface level meter. Go on the air with a friend at the other end (simplex) operate the PTT switch and tweak the stereo speaker volume control so your speech level and the audio news level match as determined by your friend at the other end. If you cannot get the levels to match, you may have to re-design the attenuator coming from T1 for greater or lesser loss. Once you have the levels matched, you can set the T2 transformer secondary tap and adjust the calibration pot for the desired swing of the audio level meter. Once this is done, do not touch the calibration pot again.

### **Operation**

The heat sink on my old Yaesu gets too hot to touch when operating at 45 watts full power due to the long duty cycle. I have been operating the transceiver at 5 watts and getting into our repeater at full quieting.

### **Conclusion**

The playing of ARRL Audio News during our net seems to have increased net participation at this writing as it was intended to do. Perhaps a project such as this will liven up your repeater as well...

