



# The VHF Transmitter



Keystone VHF Club, Inc.

W3HZU

Founded 1955 – York, PA

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FEBRUARY, 2000



## FEB 2000 CALENDAR

Edited by Bob Gundlach, N3NBT  
n3nbt@aol.com

- Feb. 3 Keystone VHF Club meeting-  
CYBER Center
- Feb. 4 VE Exam, Nazareth, PA  
610-266-0176
- Feb. 5-7 Contest, North American  
Sprint-phone
- Feb. 5-7 Contest, 10 10 International  
Winter QSO Party-phone
- Feb. 6 VE Exam, Palmer Park, MD  
202-543-7011
- Feb. 8 York Amateur Radio Club  
meeting-Red Cross
- Feb. 10 Executive Board meeting-  
Water Co.
- Feb. 12 VE Exam, Shrewsbury, PA  
301-281-6327
- Feb. 12-14 Contest, North American  
Sprint-CW
- Feb. 12-14 Contest, World Wide RTTY  
WPX
- Feb. 14-19 Contest, School Club  
Roundup
- Feb. 19 VE Exam, Laurel, MD  
301-572-5124
- Feb. 19 Hamfest and VE Exam,  
Oberlin, PA 717-938-3576
- Feb. 19-20 Contest, ARRL International  
DX -CW
- Feb. 25-27 Contest, CQ WW 160 meter  
SSB
- Feb. 25-27 YL International QSO Party
- Feb. 26 VE Exam, Owings Mills,  
MD 410-687-7209
- Feb. 26 VE Exam, Bensalem, PA  
215-638-1655
- Feb. 26 VE Exam, Port Deposit, MD  
410-378-2711

# TO "PL" OR NOT

By Bob Gundlach, N3NBT

Did you realize that since our present two meter repeater was put on the air in June, 1999 it has “kerchunked” in excess of **100,000** times and been on the air for over **660** hours as of 1/18/00? Many of these “kerchunks” have been from unwanted signals.

I am sure that all would agree that the combined results of the new repeater, amplifier, and splitting the transmitting and receiving antennas has given us a greater coverage than we have ever experienced. Unfortunately along with this is the fact that we are hearing more signals and greater interference than ever before.

A quick check of the ARRL Repeater Directory shows that more repeaters each year are utilizing “PL” tone access as a means of keeping out the increasing numbers of unwanted signals.

What must be considered, is the impact upon our membership were we to require a PL tone to access the repeater. I realize that some older equipment did not come equipped with the PL function, therefore owners of said equipment would be unable to use the repeater without modifying their equipment or purchasing new.

I personally feel that it is time that we consider establishing an “effective date” at which time the repeater would require a PL tone to access it. The controller could be programmed to announce that a PL of 123.0 is required. The PL would be of such a nature that it could be turned off for special occasions. Perhaps one of the remote receivers could be left open.

I am sure the Executive Board and Technical Committee will be discussing this issue in the near future and possibly making a recommendation to the membership.

I would be interested in hearing comments from any member. I can be contacted by phone at 717-757-3133, by e-mail at [n3nbt@aol.com](mailto:n3nbt@aol.com) or at the club site on most Saturday mornings.

*... The first thing that I'd like to do is to thank Bob for writing the main article for this months VHF transmitter. I don't think that this was his intention but the importance of this issue is great enough to warrant page 1. For those of you who are not sure what precisely “PL” is, perhaps a brief description is in order. “PL” stands for “Private Line.” Any repeater that uses the “PL” standard requires two things for the repeater to come up. The first is a carrier on the proper input frequency, and currently, this is all our repeater requires for access. The second part.... and this would be the new part, is that all stations desiring to access the repeater must transmit a sub-audible tone along with their regular audio. This tone must be lower then 300 Hz in frequency... that way, the filters in the audio stages of the listeners receiver will not pass it on to the speaker .... thus the term “sub-audible.” If you bought your rig in the last 10 years, chances are it already has a tone generator built in to it, all you have to do is get out your users manual, set it to the correct tone frequency for our repeater, and turn it on. The tone will be transmitted right along with your voice... when the repeater hears the proper tone, it will come up. Things like distant carriers, various interference, and intermod products, while on our input frequency, won't have this specific tone on them and therefore the repeater will not come up .... real good stuff! Our repeater will use a tone of 123 Hz when implemented. While this may sound like it will solve all the worlds problems and make York a wonderful place to live, there is a down side. If your rig or HT is over 10 years old, it may not have a built in tone generator. In this case, you could probably install one but I think it's a great excuse to get a new rig!*

Ed

**NEXT MEETING**  
**February 3rd**  
**at the Cyber Center**



## From the President

By *Ernie Mellinger, N3ZCW*  
emellinger@aol.com

Things are just a little wild around here as I'm typing this article as all radio positions are filled and the Club House echos with CQ CQ CQ W3HZU Calling CQ Contest. We appreciate all those who gave us a contact. Thanks to all those who came to operate and a great big thank you to all those who donated all the delicious food and snacks.

The audit of the Club books has been completed by N3NBT, WA3IKQ and N3ZCW. Do to some very good book keeping practices we were able to quickly verify all income and expenses and found all accounts to balance to the penny. A very big Thank You to Sandi Barefoot for a splendid job as treasurer.

Springfest 2000 is just a few short weeks away offering us an opportunity to spend an enjoyable day checking out the latest bargains along with catching up on all the latest news. The Springfest is our major source of income which keeps the courtesy tone greeting each of us as we key our mikes. The club would appreciate your support for this event. If anyone has any items they want to donate to the club for sale please contact AA3BJ, WB3CQN or N3NBT.

Well things are heating up here any we need a extra hand to help computer log and I've got to run so until next month 73's from N3ZCW.



From the Editor  
By *Dick Goodman, WA3USG*  
wa3usg@compuserve.com

*One of our most active members, Greg Hagens, KE3CW, lost his house to fire over the Christmas holidays. Greg & his family are currently in the process of relocating to an apartment that he owns in York. It looks as if his insurance is going to cover the loss but that can't make up for years of collected possessions and memories that were destroyed in the fire.*

*Greg does a lot of work at our clubhouse and also has a repeater site on his property containing a lot of club equipment. Fortunately, this was located away from the house and nothing here was damaged. When the club has ever needed anything, Greg was always there with a helping hand... I'm sure that we will do our best to give Greg the support he needs throughout these trying times.*

Check out the last installment of Bob Riese's VLF converter project in this issue. It's an easy way to listen to frequencies way down below the Broadcast band. Some believe that the VLF bands are the amateurs "Final Frontier" .... I personally kind of feel that way myself. It's amazing just how much communications can take place on a band loaded with so much man made noise! I even made my wife & daughter give up their Quartz Halogen floor lamps . They had dimmer controls that played pure hell on 136 KHz! Computers & digital signal processing are the rule here rather than the exception. Using a special mode called Slow Speed CW, it's possible to communicate even though the signal is never audible at either end. All this wouldn't be possible if it wasn't for Bill Gates. The PC with Windows & a soundcard is the standard platform for this fascinating medium. The actual software that allows this magic to happen is available over the Internet at absolutely no cost. It's being written by Hams for Hams. I've seen commercial software costing hundreds of dollars that doesn't do everything this free stuff does. It seems that every week there is a new program to try out, or someone came out with an upgrade to an existing piece of software. Never has computers and Amateur Radio come together so well!

That's about all I have here. Boy, for a mild Winter, it's gotten awfully cold. The other night, when it was sooooo cold & the wind was just howling outside, a rope attached to my tower with a small antenna insulator on the end started swinging around. It was 2 AM and this thing was wacking the aluminum siding of the house... right outside the bedroom. I had to get up, get dressed, go outside & climb the tower & cut that damn thing down. I just can't handle the freezing weather the way I used to.

## The VHF Transmitter

published monthly by the  
**Keystone VHF Club, INC**

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**BOB'S TECH  
TALK**

ELF  
LF  
HF  
ATV  
ANTENNAS  
SSB  
SECRET  
STUFF!



*By Bob Riese, K3DJC*  
riese-k3djc@juno.com

Well having described the LF converter I will explain how I tied it all up into a working unit and show the schematics for the preamplifiers. I decided that I wanted flexibility and be able to try different pre amps as they come along . This unit has 2 separate preamplifiers and I added a wafer switch to be able to switch from one pre amp to the other. I also added a switch position to connect the antenna directly to the mixer and can hook up new pre amps for testing. The switch allows me to do this without going through the existing RF stages.

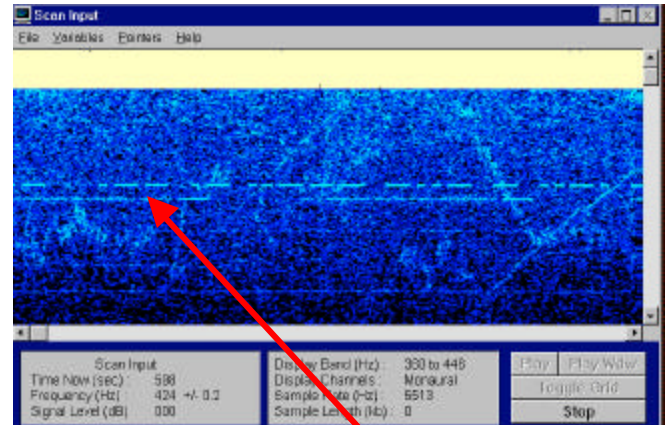
The first pre amp has a tuned network on its input which cuts off frequencies at and above the broadcast band. This is a big help in eliminating interference from the local BC stations. It is pretty simple to wire up and consists of a Jfet op amp and works well down to about 100 Khz. In order to get useful gain below 100 Khz I used the same Pre amp circuit but instead of a tuned input network , I used a handy audio transformer which works very well as an RF coil from DC to about 100 Khz. The Idea of using an audio transformer as an RF stage coil may seem odd but remember the frequency is down in the audio range, Yes you can hear radio signals at 24 Khz and there are signals from Europe I have copied at 16 Khz. Most folks can hear tones up to 16 Khz.

Over all converter operation is good . It doesn't overload , has good frequency accuracy and is versatile. If I tune to WWV on 60 Khz and hook the audio from my receiver to my sound card and run one of the Spectrum Analyzer programs on my PC, I can see the CW tone frequency from WWV as a line running across my PC screen . When I set my cursor to the line formed by the display, I get a reference that shows my receiver offset frequency for CW . I have tuned in a signal which is very accurate and I can read the offset frequency on my computer. By reading this frequency I have calibrated my receiver to within 1 or 2 cycles. The audio note is the offset and I now know what that offset frequency is.

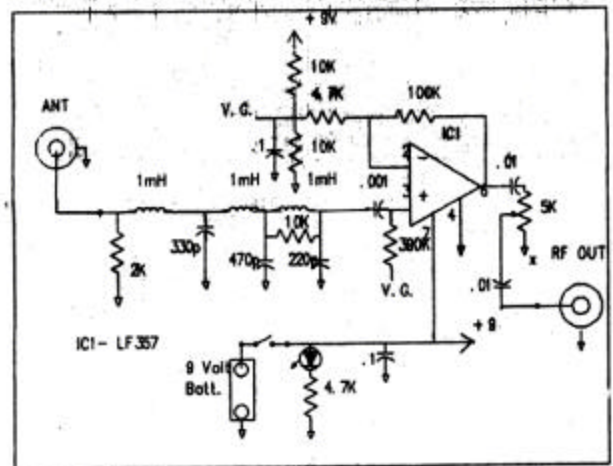
The spectrum Analyzer programs allow you to look at an audio band that can be as narrow as 80 cycles within the range of the CW offset say from 300 to 390 Hz. This is adjustable out to 5 Khz or better, you can look at things hiding in your receiver audio. It has an accuracy of less than 1 cycle.

There are several interesting things to hear on LF. From about 190 to 400 Khz there are airport beacons from all over the US. There are weather broadcasts from airports on 236 Kc and there are European BC stations from 150 to 190 Khz. The Lfers have a part 19 band that runs from 160 to 190 Khz. The Lfers have a limit of 1 watt input and a 50 Ft antenna and some of them can be heard several hundred miles.

They are activity attempting to work Europe on the 136 Khz band. This band is being used in Europe by Hams and using the Spectrum Analyzer programs and very slow CW have had contacts of over 1000 miles. At present there are 10 or more countries that allow hams to operate at 136 .This band is only 2.5 Khz wide so it is only CW and Slow CW. Slow CW uses 4 second dots and AMRAD has a 175 watt beacon on 136.745 that is copied in this area . When viewed on a Spectrum Analyzer program, you can see the CW characters form on your PC screen. Below is the picture of WA2XTF on slow CW. Spectrum Analyzer programs allow you to see signals that you can't hear and it really works ! This is an actual shot of WA2XTF from AMRAD at 100 + miles received on the converter and using a Spectrum program. They have a 1500 Ft antenna and are running QRS or slow CW at probably less that 100 Mw ERP. Underneath this , 5 Cycles lower is the other AMRAD Beacon located lower in Virginia and is about 200 miles from York and is using a smaller antenna and probably 50 Mw ERP. So get active on LF !



You can see the actual code groups on your computer screen. If you read from left to right, starting right above where this arrow is pointing, you can read "WA2XTF". The horizontal line directly below the code characters is the other AMRAD beacon located about 100 miles further away. The other lines & swirls are man made noise (60 cycle hum and their harmonics, static, etc)



This preamp is for the range of LF frequencies from about 100 KHz to the bottom of the AM broadcast band (500 KHz). At these frequencies, any receiver or the input to any mixer, such as the one in this project will greatly benefit with the addition of this circuit.

**Continued on page 4**



The ways and means committee has proposed the following activities for 2000:

**February 3 through April 6:** Raffle for an Easter Ham

**March 12:** SPRINGFEST

**May 21:** Trip to Stausburg Railroad and the Pennsylvania Railroad Museum

**June 3:** Pig Roast at the club pavilion

**August 19:** Corn Roast at the club pavilion

**September 7 Through November 2:** Thanksgiving Turkey Raffle

**Early October Bike ride.**

**October 15:** Trip to Baltimore Inner Harbor

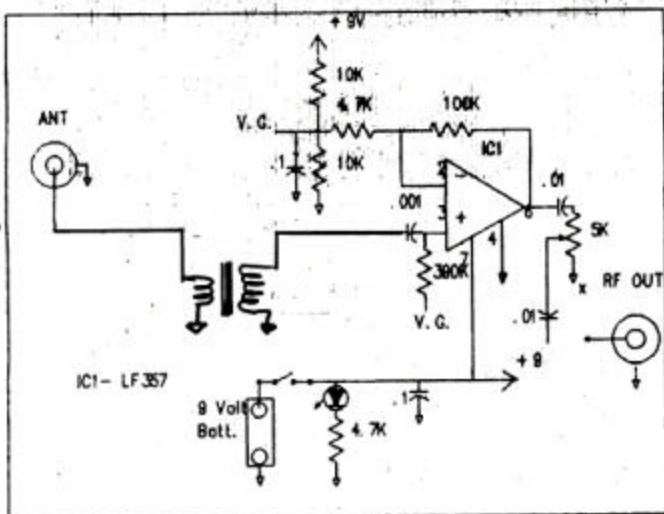
**December 2:** Christmas Party at the Viking Club

*More on each one of these as the date approaches*

**For the SPRINGFEST**

The club will again have a few tables at the springfest for the sale of used Ham gear and assorted junque, as we did last year. Bring your unwanted equipment to the Spring fest and either donate it to the club or give us a minimum price and we will deduct 10% for the club. If you are working at the Spring fest and won't have time to man a table yourself this is a good way to have your equipment on display and sold... and a good way to help your club. Bring your gear to the Springfest on Saturday before the fest and have it checked in or bring it as early as possible on the day of the fest' and get it checked in... don't just leave it unless it is a donation. Any gear that is not sold must be hauled away by the owner, this is a must because we have to pay to have discarded items carried away.

**Bob's Tech Talk - Continued from page 3**



This is the other preamp which operates over a range of frequencies from about 10 KHz to 100 KHz



The bands have been open to Europe and some rare ones have been on other than Europe. I worked 4S7YLG MADHARI, A YL that is rare and worked XZ0A a DX group in Burma. QSL to W1XT JT1CO TAK, MONGOLIA, TY1PH PATRICK IN BENIN, they are bit hard to find **Bob DJC try working those, you will have fun!!!**

There's a miracle called  
 "FRIENDSHIP"  
 That dwells within the heart  
 And you don't know how it happens  
 Or when it gets its start  
 But the happiness it brings to you,  
 Always gives a special lift;  
 And you realize that,  
 "FRIENDSHIP"  
 is a most precious gift!!!!

de Ruthanna

**DUES ARE PAST  
 DUE !**

I was really surprised to look at our club roster and see that 62 people have not paid their dues .... that's about a third of the club! Please, ladies & gentlemen .... If you haven't paid your dues yet, find Sandi Barefoot, N3NCF at the meeting on Thursday or send a check to the following address:

Sandi Barefoot  
 3040 Muirfield Drive  
 Dover, PA. 17315

Please make the check out to the Keystone VHF Club. Our budget while adequate, will not succeed if a third of the members don't support the club.

73  
 Dick, WA3USG



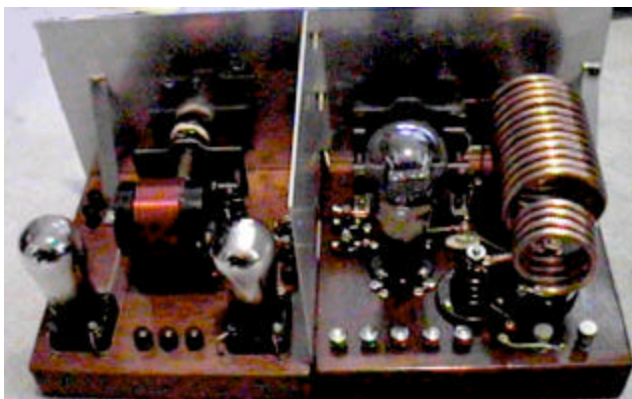
## Building a M.O.P.A. for 80 Meters CW

By *Bob Riese*  
*K3DJC*

I had my 1930 ,80 meter transmitter at the last club meeting and had an audio recording that showed how these rigs sound on the air. The oscillator / transmitter uses a pair of receiving tubes as an the generator of 80 meter RF. The problem is that the rig ,coupled to an antenna becomes dependent on the antenna for frequency stability. When the wind blows the rig will shift / jump frequency. This is normal and expected for this simple rig. Well in my case to get 3 watts out of the transmitter it needed to be closely coupled to the antenna and the night I had it on the air it was windy. Things really moved around.

The answer is to add another stage and I have built a power amplifier for the oscillator. I used a 45 type tube which will allow me to run 10 watts out and have additional stability as the antenna will not be as closely coupled to the main oscillator. This becomes a MOPA type rig or Master Oscillator Power Amplifier and should produce a signal that doesn't drift as bad as the original Oscillator. I built it from original parts and added a bigger front panel... I think it turned out pretty good.

The fun of building this stuff is finding the parts and making it work as well as making it look original. The real fun in building equipment like this is realizing that you are a model builder, the final product should look good as well as work like an original one would have.



Enjoy Breakfast Out ?  
*Join club members every  
Saturday morning at 7 AM at  
the ROUND-THE-CLOCK*

## ABOUT THE YORK HAMFEST

By *Ray Shaub, W3AXC*

When the Keystone VHF club decided to drop the York Hamfest as an activity there were some of us that could not see the work of 43 years go down the drain. There was a lot of hard work that went into creating the York Hamfest and making it grow from a small "ham picnic" into one of the largest hamfests on the East coast. Granted it is not the gala event that it used to be. However some of us thought that it could still be a viable hamfest with the proper vision and management.

To provide stability to the operation of the hamfest we formed a new club, " THE YORK HAMFEST FOUNDATION ". We registered the name "York Hamfest" with the state and have exclusive right to use that name. We applied for and received ARRL club affiliation. We opened the membership to a few select people, people that shared our views about the York Hamfest.

Contrary to popular belief it is not any one persons hamfest it is the hamfest of dedicated people who want to see the hamfest succeed. The York Hamfest Foundation was formed as a non profit organization to adhere to the IRS rules for a non profit 501 ( C ) 3 organization.

*No one person or group will profit from the success of the hamfest.*

The membership in the York Hamfest Foundation is open to any and all individuals that share the ideals of the foundation. The membership is not open to clubs, however individuals that belong to another club may assign their share of the proceeds to another non profit club.

Details of membership is available to any interested party. You can contact me, Ray W3AXC by E-Mail "[w3axc@arrl.com](mailto:w3axc@arrl.com)"

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### FOR SALE

Kenwood 742 (6mtrs, 144, 440 )	\$ 575.00
Alinco DJ-580 (144, 440 )	\$ 175.00
+3 batteries & charger	
Yaesu FT-900/AT	\$950.00

CONTACT:  
David Ness, N3LZP  
717-852-8559

73

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**We need you as a new recruit !!**  
**York Springfest Y2K**  
**12 March 2000**

## A Review of the Ten Tec RX-320 PC Controlled Receiver in it's application to Amateur Radio

By Dick Goodman, WA3USG



With my growing interest in the VLF portion of the bands, I've been looking for a way to efficiently receive those frequencies. One way is by using the coverage in my Yaesu FT-767 HF Transceiver. It tunes down below 100 KHz but it seems very insensitive below about 500 KHZ. Another way would be to build Bob Riese's VLF Converter project. I've seen it in operation and it works very well. I worry about using a converter with my transceiver however ... what if I forget it's in line and transmit into it? I also wanted a dedicated receiver for VLF. I heard about the Ten Tec receiver through the AMRAD group down in Virginia. These guy's are currently the guru's in VLF techniques... since they recommended it, I thought that I'd give it a try.

On Tuesday morning I placed a call to Ten Tec. The following Tuesday, a small package was delivered to my door. It was slightly larger than a shoe box. The Ten Tec RX-320 consists of a black metal box about 5 inches wide, 2 inches high, and about 5 inches deep. It has a built in active whip antenna and a RCA photo plug on the rear to connect to an external antenna. Don't even bother with the whip. The receiver connects to one of your PC Com ports with a supplied DB9 cable. There is also a standard external speaker jack with 1 watt of drive. Finally there's another subminiature phono jack labeled "Line Out" .... perfect to drive the input of a PC soundcard. Power requirements are 12 to 15 VDC at about 500 ma. (Ten Tec even supplies a hefty wall transformer unit). I hooked everything up and inserted the supplied 3.5 inch disk with the control software into my computer. It took about 3 minutes and the software was installed ... I was ready to go. I clicked on the RX320 Icon and was presented with what you see below.



The receiver covers from 10 KHz to 30 MHz. Modes are AM, USB, LSB, and CW. Digital Signal processing (DSP) is done at the IF frequencies. There are 32 different bandwidth filters that run from 8 KHz down to 300 Hz. Any of these filters may be used in any mode... including AM. The receiver may be tuned in 1 Hz steps if desired ... this is selectable from the software. There is also an IF shift control and an S-Meter. A really neat feature is a squelch control... I have never seen one work on HF this well!

Tuning around the international shortwave bands, I was impressed. It sounded better here than any radio I've ever used. The true test would be using SSB on the HF amateur bands .... how would it stack up to the FT-767? I tuned to a QSO on 1.865 MHz. Some of the guy's were loud.... some not. The audio from the 320' was superb. Using the DSP filters, I could really optimize reception for conditions. I AB'd between the 767 & the 320. Signals on the 320 were more pleasant to listen to... just terrific audio. Sensitivity of the 320 was at least as good as the 767. Selectivity.... boy, the 320 was much better here. Using the multiple DSP filters worked well. If there wasn't adjacent frequency interference, I could practically make the stations sound "Hi Fi." If there was some interference, generally the filters would remove most if not all of it (at the expense of audio fidelity). Frequency calibration was right on the money ... using the software, if you're off calibration, you can insert an offset so you will have perfect frequency accuracy... I didn't have to do that.

You can insert as many frequencies in memory as you have disk space for .... and this could be thousands! Storing something in memory saves the frequency, mode, AGC setting, and DSP filter configuration. You can also call it anything that you like... you're not limited to a few characters.

Finally, there's a object called a "Bandscope" that may be called up. This is basically a Spectrum Analyzer that gives a graphical representation of activity on the band. It's center frequency defaults to where you have the receiver tuned. It may be set to sweep from 10 KHz to 250 KHz each side of where you are tuned to. When it is actually sweeping, the receiver is muted. A 500 KHz total sweep takes about 30 seconds. Below is a sweep of the 160 meter band. I was listening to a OSO on 1.872 MHz.



Continued on page 7

**Keystone VHF Club**  
**E-Board Minutes of January 13, 2000**  
*By Charlotte Markley, N3URR*  
**Secretary**

Meeting called to order at 19:30 by Ernie N3ZCW. 9 officers and 2 committee persons were present.

**SECRETARY'S REPORT:**

Charlotte N3URR, minutes read and approved.

**TREASURER'S REPORT:**

Sandi N3NCF, audit was done by Bob N3NBT, Ernie N3ZCW, Tom WA3IKQ, everything was in good order.

Necessary expenses to run club for 1 year is \$3,106.70

Dick WA3USG, Ernie N3ZCW, Tom WA3IKQ will form committee to help set up new budget for the new year.

**WAYS & MEANS REPORT:**

List of events for year. List will be in newsletter.

**OLD BUSINESS:**

E-Board discussed the printing of club brochures and membership applications. Joe KE3YR, will do printing as contribution to club.

Field Day, June 25 & 26.

Meeting adjourned at 20:40

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Bill Gates' book for high school and college graduates contains a list of 11 things that they did not learn in school. In his book, Bill Gates talks about how feel-good, politically correct teachings created a full generation of kids with no concept of reality and how this concept has set them up for failure in the real world.

**RULE 1:** Life is not fair; get used to it.

**RULE 2:** The world won't care about your self-esteem. the world will expect you to accomplish something BEFORE you feel good about yourself.

**RULE 3:** You will NOT make 40 thousand dollars a year right out of high school. You won't be a vice president with a car phone, until you earn both.

**RULE 4:** If you think your teacher is tough, wait 'till you get a boss. He doesn't have tenure

**RULE 5:** Flipping burgers is not beneath your dignity. Your grandparents had a different word for burger flipping; they called it opportunity.

**RULE 6:** If you mess up, it's not your parents' fault, so don't whine about your mistakes, learn from them.

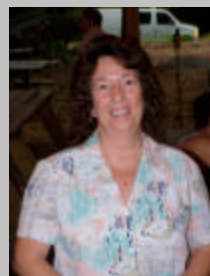
**RULE 7:** Before you were born, your parents weren't as boring as they are now. They got that way from paying your bills, cleaning your clothes and listening to you talk about how cool you are.

**RULE 8:** Your school may have done away with winners and losers, but life has not. In some schools they have abolished failing grades; they'll give you as many times as you want to get the right answer.

**RULE 9:** Life is not divided into semesters. You don't get semesters offand very few employers are interested in helping you find yourself. Do that on your own time.

**RULE 10:** Television is NOT real life. In real life people actually have to leave the coffee shop and go to jobs.

**RULE 11:** Be nice to nerds. Chances are you'll end up working for one.



**Keystone VHF Club**  
**General meeting Minutes of**  
**2 December, 1999**  
*By Charlotte Markley,*  
**N3URR**

Meeting called to order at 19:15 by Ernie N3ZCW. 30 members were present.

**SECRETARY'S REPORT:**

Charlotte N3URR, Minutes stand approved as appeared in newsletter.

**TREASURER'S REPORT:**

Sandi N3NCF, Balance in First Capitol Checking	\$1,142.00
Balance in Merrill Lynch Acct.	\$4,077.35
Balance in CD	\$2,000.00
Balance in Springfest Acct.	\$1,455.84

**TECHNICAL HAPPENINGS:**

Bob K3DJC, showed and demonstrated a 1929 amateur transmitter. John Jaminet, W3HMS talked about DX ing.

**TRUSTEE'S REPORT:**

Bob N3NBT, several members were at club site to operate generator if needed for water company.

**WAYS & MEANS REPORT:**

Has list of activities for club, needs input.

**RACES/ARES REPORT:**

Ed KA3LJL, will be new committee person.

**SPRINGFEST REPORT:**

Riley Hollingsworth will be speaker at Springfest.

**OLD BUSINESS:**

Ray W3AXC and John W3SST will co-ordinate a team for testing.

50/50 drawing won by Josh KB3DXO.

Final announcements

Motion to adjourn made by Dave N3LZP, 2nd by Carey K3IIB.

Meeting adjourned at 20:55

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***RX-320 review continued:***

You can actually see all the QSO's taking place from 1.822 MHz to 1.922 MHz. What an easy way to tell if a band is open !!

Another big plus. The control program will run just fine on anything from a 486 to a high performance Pentium. If you want to run other programs while the receiver is in operation... no sweat, minimize the control program and run anything you want. Even run a SSTV program and receive Slow Scan television from the RX-320 on the same computer ... works like a charm!

All in all, Ten Tec came up with a real winner here. Especially the price.... would you believe it's \$295 (plus shipping) ?

Next month, I'll cover using the RX-320 on VLF and show an actual comparison of the 320 vs the Yaesu FT-767 on 136 KHz. I was greatly surprised!



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## DATED MATERIAL

BULK RATE  
U.S. Postage  
PAID  
York, PA  
Permit #413

The VHF Transmitter  
P.O. Box 7462  
York, PA 17404-0462

---

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**CLUB  
REPEATERS  
FM  
IN/OUT  
29.580/29.680  
52.97/53.97**

**146.370/146.970  
TONE 123.0**

**442.275/447.275  
ATV  
426.25 IN  
439.25 OUT  
923.25 OUT**

**PACKET 145.090  
PBBS W3HZU-1  
KA-NODE W3HZU-7  
W3HZU-8  
(Digi, Alias YORK)**

**Keystone VHF Club, Inc. W3HZU  
P.O. Box 7462  
York, PA 17404-0462**

CLUB WEB SITE: <http://yourpage.blazenet.net/stack>

### CLUB SPONSORED NETS

All Nets: 146.97 (-)

**MON 8:30PM York ARES/RACES Committee  
MON 9PM York County 2-Meter Net  
TUES 8PM ATV Net (146.970 for audio)  
WED 9PM Quarter Century Wireless Assoc.  
THUR 8PM York County YL Net**

**Club meetings are held on the 1<sup>st</sup> Thursday of each month  
at the Cyber Center, York, PA**