



THE FRANKFORD RADIO CLUB NEWSLETTER

PROFICIENCY THROUGH COMPETITION

CALENDAR

November 2005:

- 5-6 ARRL Sweepstakes, CW
- 8 FRC Main Meeting, Phila**
- 8 Rexy Meeting B**
- 12-13 Worked All Europe, RTTY
- 17 T.I.T.S. Meeting, Noon**
- 19-20 ARRL Sweepstakes, SSB
- 22 Rexy Meeting B**
- 26-27 CQWW DX Contest, CW**

December 2005:

- 2-4 ARRL 160 Meter Contest**
- 10 FRC Main Meeting, KofP**
- 10-11 ARRL 10 Meter Contest
- 13 Rexy Meeting B**
- 15 T.I.T.S. Meeting, Noon**
- 27 Rexy Meeting B**

January 2006:

- 7-8 ARRL RTTY Roundup
- 10 FRC Main Meeting, KofP**
- 10 Rexy Meeting B**
- 14-15 North Amer. QSO Party, CW
- 19 T.I.T.S. Meeting, Noon**
- 21-22 North Amer. QSO Party, SSB
- 24 Rexy Meeting B**
- 28-29 CQ 160 Meter Contest, CW

CHANGES

None this month

Deadline for December issue:

Sunday, November 20, 2005

(sorry, early deadline due to CQWW and slightly earlier December meeting)

President's Column

I'm writing this the weekend before the CQWW phone contest so I don't know how the contest went. But, knowing this club, I'm sure that everyone gave their best. This is the first step in defending a well deserved win in last year's CQWW. We just have to stay focused through the CW weekend and I'm sure we can come out on top again this year.

I want to thank Alex, **W2OX**, for a very spirited and colorful talk on preparing for the contest from the DX station side of the contact.

I also want to thank all the Dxpeditions who went out and worked so hard to make points for the club. Your efforts are greatly appreciated by everyone.

At the November meeting, we will be raffling off an Ameritron AL-80 amplifier from **W3BEN**'s estate. This is a nice small, light amp that would be a nice addition to your shack and a great amp to carry along on a Dxpedition. I hope to see a lot of you there so we can hear about your success on the phone weekend.

Now, it's on to the CW weekend. The final step in winning again this year.

73 – John – K3ZV

FRC CQWW CW DXpeditions:

Bob, **KQ2M** and Alex, **W2OX** will be on V4.

John, **W2GD** will be operating P40W.

John, **K3TEJ** and **K3CT** will be going to WP2Z.

John, **K3MD** will be operating KP2/K3MD.

Bud, **AA3B** will be operating V26K.

MEETINGS

Main Meeting in Philadelphia

The main monthly meeting of the **Frankford Radio Club** will be held Philadelphia on Tuesday, November 8 at 8 PM. Location is Rosenburger Hall, Room 102 at the University of the Sciences.



T.I.T.S. meeting—The Trexlertown International Transmitting Society meets on Thursday, November 17 at 12:00 noon. Location is the Hometown Diner on Route 222 in Trexlertown..

Rexy Meeting B—The Rexy's **FRC Meeting B** meets about 8 PM on the second and fourth Tuesdays of each month.

N3QQ, SK

Thanks to Blair, K3YD for the following

This came in from Janice Pope (now-W3WBS) early this morning (October 4). She is XYL of Bob Kratz. Bob previously held the calls W3WBS, KU3K, and was currently **N3QQ**. He has not been active for several years due to a battle with prostate cancer.

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Hello. It is with mixed emotions that I must tell you Robert died this evening (October 3) at 6:50 p.m., in the Lehigh Valley Hospital, Cedar Crest. My emotions are mixed because I feared the moment of his death, not knowing how I could possibly react to losing my soul mate and my treasure. But, at the moment he drew his last breath, I felt my lungs fill with joyous air. Truly! Much to my surprise, the moment brought me the greatest joy I have felt in weeks. He made it to this day on his terms, in his time, and in his own way. I had the privilege of helping him make it there.

Robert died quite peacefully. He was comfortable and surrounded by the love of his children and good friends who camped out there with us over the past four days.

We are truly happy that, this evening, the Northeast PA Lions Eye Bank called to ask permission to have Robert's eyes donated. Robert has always felt strongly about donating his larger organs, which is not possible due to all of his treatments. So, I was thrilled that I was home to receive a phone call asking me to give permission for the procedure. Robert would be pleased.

Thanks!

Janice

**More Missing Contest Scores**



Seems as though there's no error that escapes the talents of your friendly editor. Without further ado, some additional scores that passed by the editor's nose three, four, maybe five times:

**Pete, K2PS, ARRL CW—#10 SOAB(LP) AND ARRL SSB—#3 SOAB(LP)**

**Contest Score Reporting Procedure**

Report all scores, including class and operators, to **K3WW**. Upload your CABRILLO log file to

**ssb@cqww.com for phone**

**cw@cqww.com for CW.**

**Logs are due Dec 1 2005 for SSB and Jan 15, 2006 for CW.**

The trend is to review your log for typos and upload fairly promptly.

Most logs are received the first week after the contest. If you find a typo or the robot reports missing data, you may continue to upload until the deadline and the last copy will be the official one.

If you upload to CQ, please copy k3ww@fast.net and he will archive your log.

If you have problems uploading to CQ or prefer help, send **K3WW** your CABRILLO file and he will be sure it has all the proper info, and upload it. If your logging software does not support Cabrillo, it's time to update. CT is free and does fine with current versions.

DO NOT SEND **K3WW** BIN files if you are using CT10 or CT WIN...He can still help guys with CT 7/8/9 that are having problems for any reason. His last DOS boxes have left the basement, after a few years out of the shack.

Please do not send **K3WW** scores or especially LOGS for a few days after the contest. The mail box is full, and he's still asleep.

Remember CQ divides the score equally between all OPS at multi op stations and **FRC** gets a share equal to the % of **FRC** guys reported on our roster. **THERE IS NO ATTENDANCE REQUIREMENT** for CQ CONTESTS (or ARRL anymore), if you are a member Active or formerly Inactive, and make a score, report it to **K3WW** and we will get credit.

### **New ARRL Petition Seeks to Resolve BPL Standoff**

Not all BPL systems are created equal. Some have far less potential to interfere with Amateur Radio than others. That's the rationale behind a petition the ARRL filed this week, asking the FCC to modify the Part 15 BPL rules it adopted a year ago and sharply reduce BPL's interference potential. In exchange, the League said it would withdraw its still-pending Petition for Reconsideration in the BPL proceeding, ET Docket 04-37. The ARRL says its suggested rule amendments--which take into consideration recent advancements in BPL technology--will "resolve unsettled but substantial interference issues" affecting Amateur Radio and other HF users.

"It is no longer the case that all BPL systems inherently radiate high levels of RF energy on amateur allocations on overhead medium-voltage power lines," the ARRL said. "Thus, not all BPL architectures have similar potential for harmful interference to the Amateur Radio Service (and to other licensed services). Some have inherently greater potential for interference, as currently configured, than others."

The problematic systems, the League said, are those that make use of the HF spectrum on unshielded overhead medium-voltage lines. BPL systems such as those using DS2 or Main.net technology that lack fixed, permanent notches in the ham bands, the ARRL noted, have been among those involved in interference cases. "As detailed in ARRL's Petition for Reconsideration in this proceeding, "this has resulted, in field tests and in deployments, in substantial, extremely difficult-to-resolve incidents of interference to fixed and mobile Amateur Radio facilities," the League said.

The ARRL said the FCC "has assisted not at all, or imperceptibly, in these cases, and the BPL system operator has either been uncooperative or unable to resolve the interference."

The League said its proposed additional regulations would permit those BPL architectures that are "benign," while discouraging "first-generation interference-causing BPL configurations, unless the latter modify their systems in certain minor aspects." A "benign" system, the ARRL noted, would not apply HF signals on overhead medium-voltage lines and would include fixed, permanent notches in the amateur bands.

Among the several BPL system designs that implement BPL without creating harmful interference to amateur operations, the ARRL specifically cited the Motorola Powerline LV BPL system. Motorola's system doesn't use medium-voltage power lines, and it has been designed to preclude interference to ham radio and other licensed services.

For several weeks, ARRL and Motorola have cooperated in a BPL test stand at W1AW that has operated successfully without significant interference to Amateur Radio. The League also cited BPL systems by Current Technologies, IBEC and Corridor Systems as being among those that meet the additional requirements it's proposing. Current Technologies' BPL deployment in the Cincinnati, Ohio, area, for example, does not make use of medium-voltage lines for transmission of HF signals and utilizes the HomePlug notching protocol. Limited testing, the ARRL said, indicates that, as a result, the interference potential "is minimal relative to Amateur Radio facilities."

Incorporating three elements into the BPL rules adopted last year would essentially resolve all issues that the ARRL and the Amateur Service have with access BPL, the League said: Prohibiting all access BPL systems from using Amateur Radio allocations (except the five channels at 5 MHz, which the current HomePlug system architecture does not notch); prohibiting access BPL systems from using HF bands on medium-voltage power lines; and measuring signal decay from access BPL systems using a more accurate 20 dB/decade extrapolation factor rather than the 40 dB/decade factor the current rules support.

Adopting its proposals, the League said, would result in a more robust product that meets the Commission's stated goals of accommodating BPL as an additional broadband option while protecting licensed radio services. "The present BPL rules achieve the first of the goals, but they are woefully inadequate to meet the second," the ARRL said.

"It is the Commission's obligation to recognize and utilize this opportunity and to amend its rules to protect licensed radio services for the first time in this proceeding," the ARRL concluded. "It can be done without significant system redesign by any BPL provider." A copy of ARRL's petition is on the League's Web site

<http://www.arrl.org/tis/info/HTML/plc/filings/BPL-FNPRM.pdf>.

*Reprinted with permission from the October PVRC newsletter*

## **New TIA Wind Requirements**

**By Frank Donovan W3LPL [reprinted from Towertalk]**

I believe it's been mentioned on Towertalk that a new standard, TIA- 222-G comes into effect on January 1, 2006. This new standard will be incorporated by reference into the Uniform Building Code (UBC). Most county and municipality building codes require conformance with the UBC. Fortunately, it will take a few years for the counties to incorporate the new UBC into their building codes. While copies of TIA-222-G can be purchased from TIA, they are exceptionally expensive. However... there is a pdf presentation on the web that contains many of the key differences in TIA-222-G, including new wind and ice zone maps. See <http://www.mei1inc.com/NAB-2003presentation.pdf>.

One of the changes is in the wind zones. TIA-222-G contains over a hundred pages of wind and ice zone information for every county in the US. TIA-222-G has changed the way that windspeed is specified, from the traditional "mile of wind" approach to a three second maximum gust specification. The TIA-222-G minimum wind speed requirement (applies to most counties in the US) is now 90 MPH three second gust, which is equivalent to a 75 MPH "mile of wind", 65 MPH sustained wind for 10 minutes or 62 MPH sustained wind for one hour.

Another aspect of TIA-222-G that could impact hams in the future is the new requirement to evaluate the risk to human life of new tower installations. When there is a risk to human life (for example, if a tower could topple on a residence or a populated area), the requirements become much more severe than current standards. For a new tower in a location where human life is not at risk, TIA-222-G is very similar to current requirements.

## **Classic Antenna Book for Free**

**By John Brosnahan W0UN [reprinted from Towertalk]**

I have often been asked where to get a copy of Laport's Radio Antenna Engineering, a classic antenna book, published in 1952 by McGraw-Hill. Edmund Laport was chief engineer of RCA's international division and this book has some WONDERFUL old-time antenna photos. I have treasured my copy since I obtained it in the early 1960s. Once again today someone asked me where they could find a copy of the book so I did a web search and lo and behold you can now buy a reprint for \$16.03 -- OR -- You can download a FREE copy. It is a 32.1 MB pdf file and is a pretty good reproduction of all 574 pages. You can't be an antenna guy without a copy of this classic. Did you notice the word FREE above??? <http://books.lulu.com/content/159004>

### **Pennsylvania Utility Cites Unfavorable Economics in Ending BPL Trial**

PPL Broadband announced this week that it's terminating its broadband over power line (BPL) experiment in Pennsylvania's Lehigh Valley. According to media reports, the company is citing the high cost of a full-scale BPL rollout and competition from cable and DSL service in the region as the reasons for the shutdown. Approximately 300 households participating in the trial were said to be paying \$40 a month for the high-speed Internet service. Although Amateur Radio stations in some of PPL Broadband's service area reported BPL interference, the company did not cite it as a factor in its decision to drop out of the BPL race.

"Several local amateurs reported interference to their home stations," said ARRL Laboratory Manager Ed Hare, W1RFI, who visited the Lehigh Valley several times to take BPL system emission measurements. "While this was resolved in whole or in part by PPL, in one case the interference was 'fixed' by turning off BPL completely to the street in front of the amateur reporting the interference." Even so, Hare says, the amateur continued to experience moderate interference from other parts of the system.

PPL claimed it had no BPL equipment operating on the spectrum the complaint targeted. During a visit a few weeks later, however, Hare said he was able to quickly pinpoint the source "on the band PPL claimed it wasn't using" about a half mile away from the ham's location, although PPL was never able to completely resolve the case.

Hare reports the BPL system was creating S9 noise on entire ham bands within a "rather large" deployment area. "Had this system continued to build out, additional reports of interference from mobile and fixed amateur operation would have been inevitable," he predicted.

ARRL CEO David Sumner, K1ZZ, said he wasn't surprised to learn of PPL's decision to get out of BPL. "It bears out what knowledgeable economists have been saying about BPL's prospects for some time," he said. "PPL has considerable excess fiber capacity and was trying to leverage that investment by offering broadband service to consumers via BPL. If they couldn't make it pay, it's doubtful anyone else can."

The Allentown company first offered BPL Internet service in Whitehall Township and Emmaus, later expanding to parts of Bethlehem, Upper Macungie Township, Hanover Township and Northampton County. In its formal comments in the FCC BPL proceeding, the ARRL cited measurements taken at one site within the BPL test system in Emmaus that "exceeded FCC Part 15 limits by up to 20 dB or more."

An October 4 article in Allentown's The Morning Call newspaper quoted PPL spokesman Jim Santanasto as saying that the utility couldn't charge enough in the face of stiff cable and DSL competition and that its pool of potential customers was too small. "The economies of scale wouldn't work," the paper quoted Santanasto as saying.

### **Cape Verde D4B contest station now QRT**

Al Teimurazov, D4B/4L5A (photo), announced in late September the closing of the D4B contest station on Monte Verde, Mindelo, Cape Verde Islands. "I have achieved, and in some cases exceeded, all my goals that I set out to do from D4," Teimurazov said in a farewell statement. "I am proud and honoured to have played an active part in the ham radio contest community for the past few years." Additional information and photos are on the D4B Contest Station Web site <<<http://www.qsl.net/d44tt/pictures.html>>>.

### New Connecticut law not expected to affect radio amateurs

A Connecticut state law restricting the use of handheld mobile electronic devices while driving went into effect October 1. The new statute, Public Act 05-220, in general prohibits drivers from using "a hand-held mobile telephone to engage in a call" or from "using a mobile electronic device" while the vehicle is in motion. ARRL General Counsel Chris Imlay, W3KD, says he believes the new law was intended to apply principally to cellular telephones, but he concedes it's not entirely clear that the new term "mobile electronic device" excludes Amateur Radio transceivers. Even so, Imlay said, "there is a good argument that they are, in fact, excluded." Imlay concludes, however, that it would be better to have a specific exemption for Amateur Radio equipment. Radio amateurs cited under the new statute are asked to contact John Hennessee, N1KB, at ARRL Headquarters <jhennessee@arrl.org>.



#### Work Wanted:

Experienced tower climber immediately available to perform antenna and tower maintenance.

Install/repair/remove antennas, replace feedlines and cabling, rotator servicing, guy wire renewal, new tower installations (guyed and self-supporting), and tower removal.

Reasonable hourly rates and scheduling that meets your needs.

Clearance sale—Hygain 203BAS 3 ele 20M - \$125, Hygain 153BAS 3 ele 15M - \$100. Perfect for side mounting on your tower - fixed South.

Contact: John Crovelli W2GD

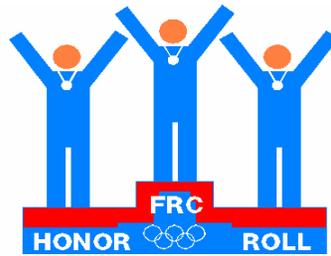
w2gd@hotmail.com

(908) 996 3043

<http://www.qsl.net/lz1jz>







**NOVEMBER**

**CONDUCTED BY N2SS**

**2005**

**WARC BANDS**

| <u>30 Meters</u>   | <u>17 Meters</u>  | <u>12 Meters</u>  |
|--------------------|-------------------|-------------------|
| <b>K2FL .. 332</b> | <b>K2FL...335</b> | <b>N2TK ..328</b> |
| N2TK .....328      | <b>N2TK ..335</b> | K2FL..... 326     |
| N2LT .....318      | N2LT ..... 332    | N2LT..... 321     |
| W3BGN ....314      | W3CF ..... 331    | W3BGN... 313      |
| K2RW .....296      | W3BGN ... 327     | W3CF ..... 303    |
| W2YC .....296      | K2RW ..... 324    | N2SS..... 302     |
| N2SS .....290      | N2SS ..... 320    | K2RW ..... 300    |
| W8FJ .....287      | W2UP ..... 304    | W2YC ..... 273    |
| K2PS .....284      | K2PS ..... 303    | K2PS..... 268     |
| W2UP .....264      | W2YC ..... 300    | W2UP ..... 256    |
| N3RD .....247      | W8FJ ..... 291    | W8FJ ..... 228    |
| N2MM .....233      | N2MM..... 268     | N1RK..... 218     |
| K3II .....229      | N1RK ..... 253    | KQ3F ..... 217    |
| W2LE .....212      | KQ3F ..... 252    | K3II ..... 202    |
| KQ3F .....195      | K3II ..... 240    | N3KN ..... 191    |
| NZ3O .....188      | NZ3O ..... 233    | K2NJ ..... 190    |
| AA2WN...171        | W2LE ..... 202    | NZ3O ..... 188    |
| W2RQ .....144      | W2YR ..... 202    | W2YR ..... 187    |
| AB2E .....128      | K2NJ ..... 179    | N2MM ..... 185    |
| W2YR .....132      | K2JF ..... 168    | W2LE ..... 176    |
| K3CT .....126      | N3KN ..... 168    | NA2U ..... 154    |
| N3KN .....119      | NA2U ..... 162    | K2JF ..... 135    |
| K2NJ .....113      | W2RQ ..... 142    | AB2E ..... 92     |
| K2JF .....112      | K3ND ..... 124    | K3CT ..... 76     |
| NA2U .....105      | AA2WN ... 116     | W2RQ ..... 62     |
| N1RK .....97       | AB2E ..... 108    | K3GYS ..... 30    |
| K3ND .....85       | K3CT ..... 91     | N2VW ..... 28     |
| N2VW .....76       | K3GYS ..... 85    | AA2WN ..... 20    |
| W3CF .....61       | N2VW ..... 67     | W2CG ..... 1      |
| K3GYS .....17      |                   |                   |

K2FL and N2TK still duking it out for that elusive, undisputed **KING OF WARC**

**Rules for FRC Honor Roll Listings.**

Provide me with your total IOTAs worked, or countries (including deleted) worked for: WARC Bands, 160 Meters, Digital modes, Mobile, 6 Meters or your total for 80,40,20, 15 and 10 for 1.5K Club. Countries do not count until HQ Awards Committee takes action and announces a start date for a new country.

**160 Meters**

|                       |                |
|-----------------------|----------------|
| <b>W3BGN .....293</b> | K2PS ..... 106 |
| AA1K .....287         | K2RW ..... 93  |
| WT3Q .....254         | AB2E ..... 90  |
| N2LT .....248         | N2VW ..... 85  |
| N2TK .....245         | W2CG ..... 85  |
| K3SX .....229         | W2YR ..... 81  |
| NO2R .....218         | N2SS ..... 79  |
| W8FJ .....207         | NA2U ..... 78  |
| K3JIG .....190        | W3CF ..... 77  |
| W2UP .....189         | K3NL ..... 70  |
| N2MM .....182         | K3CT ..... 63  |
| K3NZ .....172         | K2NJ ..... 59  |
| W2YC .....171         | KQ3F ..... 57  |
| K3NM .....156         | NZ3O ..... 55  |
| N3RS .....156         | N1RK ..... 42  |
| K3II .....149         | AA2WN ..... 36 |
| K2FL .....143         | K2JF ..... 34  |
| K3ND .....136         | W2LE ..... 28  |
| W2RQ .....123         | N3KN ..... 28  |
| .....                 | K3GYS ..... 12 |

W3BGN continues as the undisputed Top of Top Band.

**Digital**

|                      |                |
|----------------------|----------------|
| <b>W2UP .....337</b> | W2YR ..... 139 |
| N2LT .....332        | KQ3F ..... 132 |
| K2PS .....287        | K2JF ..... 113 |
| K2RW .....266        | W2LE ..... 85  |
| W2YC .....242        | N2SS ..... 53  |
| K2NJ .....235        | N1RK ..... 39  |
| AA2WN .....187       | K3GYS ..... 15 |
| N3KN .....179        | W8FJ ..... 12  |



**MOBILE DX**

|                      |                 |
|----------------------|-----------------|
| <b>W2YC .....276</b> | K3GYS ..... 143 |
| AA1K .....270        | AA2WN ..... 131 |
| N2SS .....234        | W2YR ..... 21   |
| K2JF .....150        |                 |



**1.5K Club**

|                        |                 |
|------------------------|-----------------|
| <b>K2FL..... 1708</b>  | KQ3F .....1453  |
| <b>W3BGN .... 1696</b> | K2NJ .....1406  |
| <b>N2TK ..... 1688</b> | W3CF .....1403  |
| <b>N2LT ..... 1684</b> | AA2WN .....1369 |
| <b>W2UP ..... 1664</b> | K2JF .....1350  |
| <b>W2RQ ..... 1623</b> | NA2U .....1335  |
| <b>K2RW ..... 1610</b> | W2CG .....1305  |
| <b>N3RS ..... 1603</b> | N1RK .....1287  |
| <b>W8FJ ..... 1593</b> | N2VW .....1270  |
| <b>K3II ..... 1573</b> | K3CT .....1229  |
| <b>W2YC ..... 1542</b> | W2YR .....1148  |
| <b>N3RD ..... 1528</b> | W2LE .....1141  |
| <b>NO2R ..... 1527</b> | N3KN .....1111  |
| <b>N2MM ..... 1524</b> | K3NM .....1107  |
| <b>K2PS ..... 1521</b> | NZ3O .....1088  |
| <b>N2SS ..... 1521</b> | AB2E .....1164  |
| <b>K3ND ..... 1501</b> |                 |



**Islands On The Air**

|                      |                |
|----------------------|----------------|
| <b>K2FL..... 989</b> | NZ3O .....317  |
| N2SS ..... 822       | N2VW .....261  |
| W2YC ..... 604       | W3CF .....253  |
| W8FJ .....592        | W2YR .....234  |
| N1RK .....540        | K3GYS .....215 |



**6 METER DXCC**

|                       |               |
|-----------------------|---------------|
| <b>N2LT ..... 106</b> | N2SS .....55  |
| <b>K2NJ ..... 100</b> | N3KN .....52  |
| <b>K2PS ..... 100</b> | K2RW .....42  |
| AA1K ..... 99         | W2YR .....41  |
| K2JF ..... 94         | W2YC .....19  |
| K3OO ..... 77         | AA2WN .....15 |
| K3SX ..... 75         | N2TK .....11  |
| N1RK .....57          | K3GYS .....10 |



# THE FRANKFORD RADIO CLUB NEWSLETTER

P. O. Box 431 Albury, PA 18011-0431



Affiliated Club

## The Frankford Radio Club

### Club Officers

President, **K3ZV**, John Lindmeier .....856-768-5348  
Vice Pres, **N3DXX**, Art Hitchens .....

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Email: kq2m@earthlink.net

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Treasurer, **K2QM**, Bob Shohet.....203-270-8456

### Committee Chairman

Repeater, **K3NL**, Nick Leipold ..... 610-449-8910  
Packet, **N3RD**, Dave Hawes ..... 610-935-2684  
Activities, **N3AD**, Alan Donziger .....610-581-7032  
Awards, **K2QM**, Dan Marlow ..... 609-683-5633  
Membership

### Newsletter & Roster

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Printing, **W2RDS**, Rick Stoneking..... 609-265-0885

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Email: w2rds@arrl.net

**Repeater** - 2 meters, 147.27/147.87 Output PL tone, 114.8

**Home Page** - [www.gofrc.org](http://www.gofrc.org)

### Meetings

Meetings are held on the 2nd Tuesday of each month (Sep through May) at 8 PM at the University of the Sciences, Philadelphia. Summer meetings are held at member homes (one Saturday/ Sunday per month).

### Packet Cluster Contest/DX System

144.930 W3FRC  
144.930 W2JT  
144.950 K3ZV  
145.010 N3ED  
145.530 K3WW  
145.530 AA1K  
145.570 WT3Q  
145.570 K2TW  
145.590 N2NT  
145.650 K2TD  
145.670 W3PP  
145.730 N2BIM  
147.495 W3MM

### Telnet DX Cluster

k2ut.gofrc.org  
k3ww.gofrc.org 7300  
w3frc.gofrc.org 7300