



## The Elephant Cage!

AI, VOINO

Imagine an antenna array that was 1000 feet in diameter, over 100 feet high, and required more than 40 acres! Such arrays do indeed exist, and the best thing is that security is so tight there are no pesky neighborhood associations nearby to complain!

The Wullenweber is a receive-only antenna used by the American and allied militaries for Radio Direction Finding and signal intercept.

The German Navy first developed it during World War II. One of the two arrays built by Germany was destroyed following the war, and the other disassembled and brought back to the University of Illinois for study. It was the Soviet military that first employed Wullenweber arrays however. In fact, the Soviets deployed 20 before the United States military demonstrated an interest in the huge systems in the late 1950s.

The Wullenweber is also known as a CDDA, or Circularly Disposed Dipole Array, and also as a CDAA, or Circular Dipole Antenna Array. Of course, other, more descriptive

names have been given to the Wullenweber. These include the Dinosaur Cage, the Turkey Cage, and the Elephant Cage. Incidentally, Wullenweber was not a scientist associated with the development of the antenna. He was actually a Robin Hood type of figure who was born in Hamburg in 1488, and became a martyr for his fight against injustice. The German Navy used Wullenweber as

a cover-name during the war.

The Wullenweber used by the US Navy is designated the

AN/FRD-10, while the AN/FLR-9 is the US Army and Air Force version. The AX-16 is a half-size version used primarily in Great Britain, where space is at a premium.

The AN/FRD-10 has 2 concentric rings of vertical antennas. The outer ring has a diameter of 850 feet and consists of 120 sleeve monopoles, each 80 feet high. The inner array is 750 feet in diameter and has 40 folded dipole elements, 120 feet high. Inside the inner array is a reflecting screen. It is made of approximately 700 vertical copper wires suspended



Issue 53

Volume 12

December 2003

|                                   |    |
|-----------------------------------|----|
| <i>Club Information</i>           | 2  |
| <i>Club and Local News</i>        | 3  |
| <i>HF Operations</i>              | 6  |
| <i>Satellite Operations</i>       | 7  |
| <i>Swapfest News</i>              | 8  |
| <i>Radio Operating Practices</i>  | 8  |
| <i>Crossword Puzzler</i>          | 9  |
| <i>Public Service</i>             | 10 |
| <i>Amateur Technician Classes</i> | 11 |
| <i>Calendar</i>                   | 12 |
| <i>The Back Page</i>              | 12 |

### Please Note:

January 0-Beat deadline  
December 26, 2003

No content is accepted  
after the deadline.

**Don't miss the club  
Christmas party,  
see page 2 for more  
info.**

(Continued on page 8)

**Meetings** Our monthly meetings are held on the 2nd Wednesday of each month at 7 pm, temporarily at the El Paso County Office of Emergency Management, 305 S Union Blvd. Our Annual meeting is in October. Check the web site for any changes.

**Regular License Exam Sessions** Our ARRL VE test sessions are on the 2nd Saturday of even numbered month. Contact Erik KGØXE for details.

Examinees need to bring (1) \$12, preferably a check or money order payable to ARRL/VEC; (2) picture ID; (3) the signed original and a copy of your current amateur radio license and CSEs you have (we keep the copies); and (4) a pen, pencil, and calculator if needed. Memory calculators will be checked.

Decembers regular VE session will be held at 09:00 at the El Paso County Office of Emergency Management at 305 S. Union Blvd. This is the next building south of Devry University. Please use the East entrance to the building.

**PPRAA Web Page** See it at <http://www.qsl.net/ppraa/>. Thanks to Lee Inman KØQED for maintaining these pages.

**Get on the PPRAA E-mail Reflector** Stay on top of new or short-fused developments. Subscribe at <http://mailman.qth.net/mailman/listinfo/ppraa.net>. Thanks to John Wishart KCØJFH for maintaining this list.

**PPRAA Simplex Net** New time and day to be announced soon.

**Nonprofit Organization** The PPRAA is a federal 501(c)(3) nonprofit organization and welcomes all contributions. Your contributions/ donations may be tax-deductible.

## Officers and Directors

|                |                |        |                        |
|----------------|----------------|--------|------------------------|
| President      | Al Penney      | VO1NO  | alpenney@codenet.net   |
| Vice President | Dennis Major   | NØABC  | n0abc@qsl.net          |
| *Secretary     | Joanie VerDuft | KCØGMI | verduftj@earthlink.net |
| Treasurer      | John Hasling   | KØAAI  |                        |
| *Board Member  | Tom McDaniel   | NØNTX  | n0ntx@amsat.org        |
| Board Member   | Kate Muniz     | WB9BAH | wb9bah@aol.com         |
| *Board Member  | Ben Cruise     | NØLNW  | n0lnw@arrl.net         |
| *Board Member  | Jerry VerDuft  | ADØA   | verduftj@earthlink.net |
| Ø-Beat Editor  | Tom Dawson     | KCØNRZ | kc0nrz@arrl.net        |

\* Indicates this Director is in the 2nd year of a two-year term

## Committee Chairs & Other Contacts

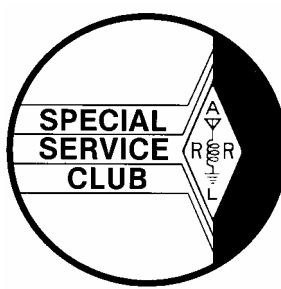
|                     |                 |        |                        |
|---------------------|-----------------|--------|------------------------|
| Activity            | VACANT          |        |                        |
| Auditing            | Kate Muniz      | WB9BAH | wb9bah@aol.com         |
| Asset               | Mike Stansberry | KØTER  | k0ter@arrl.net         |
| E-Mail Reflector    | John Wishart    | KCØJFH | john.wishart@hp.com    |
| Historian           | Ron Deutsch     | NKØP   | nk0p@arrl.net          |
| Interference        | Bill Petty      | NØNJX  | william.petty@sil.com  |
| Membership          | Les Borst       | KCØNC  | kc0nc@worldnet.att.net |
| Programs            | Dennis Major    | NØABC  | n0abc@qsl.net          |
| Publicity           | Rob Roller      | N7LV   | n7lv@amsat.org         |
| Public Service      | Mike Stansberry | KØTER  | k0ter@arrl.net         |
| Hamfest             | Kate Muniz      | WB9BAH | wb9bah@aol.com         |
| Technical Education | Linda Hedges    | KBØRKW | kb0rk@juno.com         |
| VE Testing          | Erik Mugele     | KGØXE  | ve@teuton.org          |
| Video Librarian     | Dennis Major    | NØABC  | n0abc@qsl.net          |
| Webmaster           | Lee Inman       | KØQED  | k0qed@arrl.net         |
| AMSAT Coordinator   | Tom McDaniel    | NØNTX  | n0ntx@amsat.org        |
| ARRL Awards Mgr     | Rick Brown      | KØSU   | k0su@arrl.net          |
| ARES EC             | Sid White       | K4ARM  | k4arm@arrl.net         |
| ARES Liaison        | Mike Stansberry | KØTER  | k0ter@arrl.net         |
| ARRL Section Mgr    | Jeff Ryan       | KØRM   | k0rm@arrl.net          |
| CCARC Liaison       | Moe Pierce      | WBØRTF | wb0rtf@amsat.org       |
| HamCon Chairman     | Jerry VerDuft   | ADØA   | verduftj@earthlink.net |
| RACES Officer       | Les Borst       | KCØNC  | kc0nc@worldnet.att.net |

## Upcoming Club Programs

December is the Christmas Party on Friday, December 12th There was to be that door prize of a \$30 or \$40 gift certificate.

January will be a program on Broadband over Power Lines (BPL) unless the speaker cannot make it. In that case it will revert back to being Homebrew night.

February is scheduled to be Homebrew night, where it will be a member (& guest?) show-and-tell about the recently (in past year) assembled gadgets, equipment, and cool stuff.



**Articles for the Ø-Beat** Deadline for articles or ads for the October issue is September 26. Submit articles by e-mail, US Mail, telephone or in person to the editor. Editor reserves right to edit for readability, grammar, spelling, punctuation and length.

**Ø-Beat Available Electronically** in PDF form via e-mail and on the web at <http://www.qsl.net/ppraa/zerobeat.htm>. Contact the editor for details.

The Ø-Beat is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc, P.O. Box 16521, Colorado Springs, CO 80935-6521. Permission is granted to reprint articles provided credit is given to both the author and the Ø-Beat. For membership and subscriptions see the back inside cover of this publication. Monthly advertising rates: Full page \$48; Half page \$24; Quarter page \$12; Business card \$6. Rates are billed quarterly. Send advertisements and payments to Pikes Peak Radio Amateur Association, Inc, P.O. Box 16521, Colorado Springs, CO 80935-6521.

---

## Club and Local News

---

### Presidents Message

I hope that everyone enjoyed last month's presentations on foxhunting. I've come to realize that there is a tremendous pool of knowledge about radio direction finding in the club – people who really know their stuff. We can't let this opportunity go to waste – we just have to organize a few foxhunts! Those who have done it before know that it is a tremendously fun activity. And best of all, you don't even have to be licensed! What a great chance to get the XYL, OM or kids out for an enjoyable afternoon. Who knows – you might even persuade them to get licensed!

If you are like me you haven't even started your Christmas shopping yet, so we'll probably wait until early in the New Year before we get a foxhunt organized. This will give everyone a chance to build some of the simple but effective antennas that we discussed at the meeting. You can even build a HANDI-Finder. Directions are in the May 1993 QST, and the parts are available at Centennial Electronics or OEM Parts. And even if you don't get the time to build something, you can still participate with just your HT – remember the "body fade" technique.

At the last meeting I conducted an informal poll about the club's weekly net, currently held on Thursday evenings (or currently **not** held on Thursday evenings might be a better description!). While there seems to be interest in maintaining a weekly net, the current net has lost popularity and very few people now check in. Let's try to turn this around! There seems to be agreement that moving the net to Wednesday evenings would be a good move. As well, there is no need that only a select few have the opportunity to act as Net Control. Everyone should be able to do this – after all, any one of us might have to take charge of a net in an emergency. Don't worry – the script will be easy to follow and very informal!

Of course, we will have to add some more content to the net to encourage people to listen in. How about a trivia contest at the end of the net?

Work some good DX? Then tell us about it! There are always announcements and news bulletins that need to be passed on. As well, we can have a weekly technical tip. There's also interest in a monthly HF net, so that will be something new for many. We'll set a date to change the night of the net and make sure that it is well publicized. All you have to do is check in, and volunteer to be the net controller once in a while.

Several members have expressed an interest in a General course, and Rick K0SU has volunteered to organize one. We're still sorting out the details, but expect it to be a very "hands on" experience. If you are interested in attending the course or helping teach it then please contact Rick.

The fight against Broadband over Power Line (BPL) is still going on. It has taken a while, but it appears that other organizations and groups have finally realized what Amateurs and the ARRL have been saying since the beginning – BPL is a threat to licensed users of the spectrum! Although progress has been made, this is not the time to slack off. We have to maintain a united front until the proponents of BPL have admitted defeat! Our spectrum is too valuable to lose to BPL. Our Vice President, Dennis N0ABC, is trying to arrange for an expert in the field to talk to us about it at the January meeting. If the person isn't available for January we'll have our Home Brew night instead (I mean home made equipment, not beer!).

By the time you read this we will probably have already had our Christmas Party. I hope that everyone had fun! The holiday season is a great time to enjoy oneself, but please remember a few safety tips. NEVER drink and drive! Pay attention while driving (no cell phones!), and drive according to the conditions. Remember that 4-wheel drive is absolutely useless when it comes to stopping, so you really must slow down when the road is covered in ice or snow. Maintain your vehicle in good condition, and make sure that you have the proper emergency equipment with you. Here's

*(Continued on page 4)*

one of my pet peeves – clean the damn snow off your windows! How some people expect to drive safely when they can't see is beyond me!

That's all for now. Get on the air and be radioactive! Merry Christmas, Happy Hanukah, and Happy New Year!

73 AI VOINO

### **Board Meeting Minutes, 11/17/2003**

Joanie KCØGMI, Secretary

The Board of Directors met at the home of KØAAI on 11/17/03. President AI Penney VOINO opened the meeting at 7:05 pm. Other Board members present were VP – Dennis Major NØABC, Secretary – Joanie VerDuft KCØGMI, Treasurer – John Hasling KØAAI, Ben Cruise NØLNW, Jerry VerDuft ADØA, Tom McDaniel NØNTX, Kate Muniz WB9BAH, and Tom Dawson KCØNRZ. Additional attendees were Les Borst KCØNC and Jody Borst KAØROZ. The October Board meeting minutes were reviewed and approved. KCØGMI discussed the format of the thank you letters to be provided to guest speakers. KØAAI noted that two new people joined the club at the November meeting. John also advised that we will need a second signature authority for our banking accounts; VOINO said he would complete the required financial forms. John also discussed Ø-Beat advertising and postal rate limits. NØABC noted that the Club By-laws did not specify any specific date/time for Board meetings. After discussion and due to Ø-Beat deadlines, it was resolved that the Board would continue to meet on the Monday after the Club meeting for now. Dennis also suggested that we consider adopting or affiliating with the UCCS amateur radio club. The Board agreed that this would be a good move and VOINO will make the appropriate contacts to investigate this possibility.

The Christmas party was discussed: Kate and Joanie will cook the turkeys; AI will obtain a Bed & Bath gift certificate as a door prize and a ticket will be provided all attendees. Also, those bringing a non-perishable food donation will receive an extra ticket. KCØNC advised that he was moving and will not be able to get Ø-Beat to the printer in a timely manner. KØAAI said he would see that it got to the printer and mailed with labels provided by Les. KCØNRZ again requested Ø-Beat articles, especially information on upcoming speakers. It was discussed that information from other club newsletters would be a good source and Tom will be provided copies of those other newsletters we are receiving so he can get on their e-list. Monthly articles on various topics were solicited such as repeaters, satellites, DX, contests, etc. Anyone interested in providing a monthly write-up on a particular subject please contact [kc0nrz@arrl.net](mailto:kc0nrz@arrl.net). A suggestion was also made to put Ø-Beat on a member protected website and reduce the need for e-mailing it.

This will be further investigated by Tom and Les. NØLNW

said he would contact the local libraries to see how well stocked (and current) they are of licensing/amateur radio material. Also, it was noted that we receive a list of new licensees from ARRL and AI has asked Rick Brown KØSU to lead an Elmer program to contact these new licensees and invite them to participate in our club. WB9BAH advised that she was in process of confirming the Falcon PD Substation as site for her first Swap Fest meeting in December. Kate also volunteered to help solicit club member invites to attend our Christmas party. VOINO advised that KØSU has agreed to put together a General Class license course and AI asked for assistance in this regard. ADØA said he would help teach the code. AI then solicited recommendations for a Refreshments Chair vice Rhoda KB2BZY who asked to be relieved. ADØA suggested Sharon KCØPBR be contacted regarding this as well as a request via the club reflector. AI announced that he would be reestablishing the club simplex net on 146.58 mhz on Wednesdays at 7 pm as soon as he gets his antennas up. There being no further business the meeting was adjourned at 8:48 pm.

### **PPRAA Club Meeting Minutes 10/8/2003**

Submitted by ADØA for KCØGMI who was out of town.

The meeting was called to order at 7:04 pm by President Ben Cruise NØLNW followed by introductions around the room. September meeting minutes as published in Ø-Beat were approved. In the absence of the Treasurer KBØB, NØLNW presented the Treasurer's report reflecting a cash balance of \$7653.16. Kate WB9BAH will be getting with KBØB to audit the financial accounts. John KCØJFH reported 141 addresses and 16 posts in Sep on the Club e-mail reflector. NØNTX noted that the Broadband Over Power Line (BPL) program for Nov will have to be postponed due to the speaker (NØLNW) being out of town. Kate advised that there will be a BPL presentation at the CCARC meeting on Oct 11th and she will see if that speaker can present it at our November meeting. Kate also noted that the PPRAA Swap Fest Committee meeting for the 2004 Swap Fest will commence on either Nov 1st or 8th at the Falcon Police Station. Dennis NØABC advised that we are still in need of a facility for our monthly VE sessions. Tom KCØNRZ requested articles for the Ø-Beat. Rob N7LV announced that he is taking orders for Anderson Power Pole connectors. Rob also advised that he would present the HAMCON CD Slide Show at the November meeting. NØLNW noted that although poorly attended due to cold weather, the picnic was held and was a treat for those in attendance. Ben thanked everyone for their support this past year and it was an honor to serve as the Club President. After a break, the Hammy Award (modified by NØABC with a miniature beam antenna and blinking light) was presented to Tom KCØNRZ for his service as Ø-Beat Editor. After the prize drawings, the meeting was turned over to KØSU to conduct the Election of Officers and Board Members for the ensuing year. Rick noted that the Board nomination for President was AI Penney VOINO, and Vice President Dennis Major NØABC. There being no further nominations, it was moved, seconded

(Continued on page 5)

and unanimously voted that these be elected by acclamation. Joanie KCØGMI was nominated by the Board as Secretary. There being no further nominations, it was moved, seconded and unanimously voted that she be elected by acclamation. The Board nominations for Treasurer were John KØAAI and Mike NØMUD. There being no further nominations, the nominations were closed. Secret ballot election was conducted with the winner being John KØAAI. Congratulations John! The Board nominations for the one vacant Board Member position were Mike WV7T, Kate WB9BAH and Bill KDØJU. Mike NØMUD was nominated from the floor. There being no further nominations, the nominations were closed. Secret ballot was conducted resulting in a tie between WB9BAH and NØMUD. A run-off secret ballot resulted in WB9BAH the winner. Congratulations Kate! It was mentioned that Shelly Penney VEINOS would head the Christmas Party planning which will be held at the Springs City Church (same location as last year.) NØLNW then

### **PPRAA Club Meeting Minutes 11/12/2003**

Respectfully submitted by Joanie KCØGMI, Secretary

The meeting was called to order at 7:05 pm by President Al Penney VOINO followed by introductions around the room. The October meeting minutes were prepared but were not published in Ø-Beat so approval of the October meeting minutes was deferred. John KØAAI gave the Treasurer's report: (As of 9/30/03) \$7661.14 checking and savings; Inflows of \$108, Outflow of \$117 for October. Kate WB9BAH discussed the Financial Audit report and provided copies to the President and Secretary. Kate also noted that a Ham Fest planning meeting will be held on December 6th, 9 am at the Falcon PD substation. Les KCØNC reported 175 total paid-up members. Les also announced that both the City and County will be conducting a Weapons of Mass Destruction exercise in the 1st or 2nd quarter of 2004 and both ARES and RACES will be participating. Tom NØNTX noted a UK FM satellite is scheduled for launch in March of 2004, and a Phase III Satellite planned for 2005 or 2006. Tom also noted that AMSAT is offering a special award for working the International Space Station in memory of Roy Neal, K6DUE.

Al VOINO announced that PPRAA scored #1 in Colorado for Field Day and urged everyone to come out for next years Field Day event. The Club Christmas dinner at Springs City Church on Friday, December 12th was discussed and Al passed around a sign-up list for food. John KCØJFH noted that there are 140 listed on the Club reflector and there were 21 posts in October. Bill NØNJX advised that he had recently resolved a local interference problem which was caused by an electrical fence. Tom KCØNRZ requested articles for Ø-Beat, and was asked to please acknowledge inputs when he receives them via e-mail. Al noted that we received a special "Thank You" from ARRL in November QST for our donation to the Broadband Over Power Line (BPL) battle. Al also advised that Rhoda KB2BZY has requested to be relieved of the

refreshments duty at our meetings and Al thanked Rhoda for her past service followed by a round of applause. The weekly club net was discussed and there was consensus that we should revive it on Wednesday nights, rotate net control and include things such as trivia questions and a swap shop. Al announced that those interested were welcome to join him for coffee at IHOP at Chelton & Platte after the monthly club meetings. KCØNC announced that he had a \$100 offer for our (very old) club generator. The members agreed to sell it as is!

Les also advised that he is moving and has lots of QSTs from 1960 – 1998 that are free to anyone who wants them. He also has a lot of old equipment he will part with, contact Les at 634-3995. John KØAAI has club patches for sale at \$5 each. The HAMMY Award was presented to Al Penney VOINO for his chairmanship of our 2003 Field Day event.

Congratulations Al! After a break, the program was presented by Al Penney et al on Transmitter Hunting. Meeting adjourned at 9 pm.

### **20 years ago in PPRAA History...**

Ron, NKØP PPRAA Historian

#### **December 1983:**

A motion will be made at the December meeting to establish a club repeater. Please attend. (Interesting to note this has not appeared in any previous 0 Beat to this date.) The Red Cross gave the program at the November meeting, and led an interesting Q&A discussion. The Red Cross would like to work more closely with the club. The club purchased an insurance policy for \$300,000, with a \$1,000,000 rider for the Mall demonstration. Cost is \$100 per year. Les KCØNC will set up a calling tree to notify club members of important information. The first item will be notification of the club's Christmas party. The repeater issue was brought up by Frank KL7IPV at the November meeting. Still looking for a club callsign trustee, preferably an extra class operator. The club will look into determining whether or not it should purchase an antenna rotator. The Chapel Hills Mall demo was a success, with a number of potential new members dropping by. A motion was passed that the board recommend to the club members that the repeater motion be passed at the December 14 meeting. The board approved spending \$200 for the Snack Bar Committee for refreshments.

## HF Operations

### DX Location of the Month

AI, VOINO

(Note: Originally published in April 2002 in the Halifax Amateur Radio Club's bulletin "The Reflector".)

The tiny piece of rock known as **Gough Island** is this month's DX location. Measuring just 7 miles by 3 miles, Gough Island is located 350 km south east of Tristan da Cunha at 40 degrees South latitude, 10 degrees West longitude, which basically puts it in the middle of the South Atlantic. The island is of volcanic



The South African meteorological station on Gough Island

origin and is surrounded by huge cliffs. There are no sheltered harbors, and only 2 places where a boat can put ashore. It was discovered in the early 16<sup>th</sup> century by the Portuguese navigator Goncalo Alvarez who



named it Diego Alvarez in his own honor (*a real modest guy!*). It was rediscovered in 1731 by Captain Gough of the British ship Richmond (*three guesses where the island got its new name!*).

There were a handful of attempts at colonization, but all failed due to the harsh weather and sheer inaccessibility of the island. It was formally claimed by Britain in 1938 by HMS Milford, and made a territory of Tristan da Cunha. So remote is the island that a German commerce raider took shelter there during WWII. Although uninhabited, the island is the temporary home of 6 South African observers at a weather station. Fortunately for us, one of those people is an Amateur

Radio Operator.

**Chris de Beer, the team leader and medic, is licensed as ZD9IR.** He arrived on the island in September 2001, and has been very busy putting his call in many a DX'er's logbook. He uses an Icom IC 735 as his primary radio. Antennas include a Force 12 C3H beam modified to withstand the fierce wind, and various wire antennas for the lower bands. He is active on all bands from 160 to 10 meters, CW, SSB and RTTY. I have worked him twice in the past week, on 10 and 20 meters. While not super strong, he is able to put a

decent signal into Nova Scotia, and you should have little problem working him.

If you check out the web site listed at qrz.com, you can see several excellent photos of the island taken by

## NOAA Propagation Service to go QRT

From Amateur Radio Newsline

Amateurs around the globe may soon lose the propagation information system operated by the U.S. National Oceanic and Atmospheric Administration (NOAA). This includes real time data on the state of the interaction of the earth's magnetosphere with the solar wind and state of the earth's magnetic field. These tools have been invaluable to ham radio operators world-wide for many years. The reasons it may be going away? Budgetary cut-backs and lack of future funding.

## New CMRG Repeater

On Saturday, November 10, 2003 the 145.295 (-) repeater was turned on.

The repeater is located on Fremont Peak, 5 miles south of Salida, CO. So far, coverage is pretty spectacular. We don't know the exact coverage limits yet, but mobiles are able to access the repeater along Hwy 285 north out of Salida to Buena Vista, Hwy 24 over Trout Creek Pass, through Wilkerson Pass to Divide. To the South, Hwy 285 to at least Del Norte. It can be accessed from select locations in Colorado Springs

(Continued on page 10)

## Satellite Operations

FM Satellite operations can be performed with a dual-band HT and a handheld antenna such as the Arrow Dual Band Beam. Two separate radios can also be used, one for the uplink and one for the downlink SO-50 is one such satellite. The SO-50 Frequencies are:

436.795 MHz (+/-Doppler) FM Downlink  
145.850 MHz FM Uplink (67 Hz CTCSS required)

The Satellite SO-50 Passes for December weekends are as follows: (Passes with 20+ degrees elevation only)

| Time (Z) | Azimuth | Elevation | Rx Doppler |
|----------|---------|-----------|------------|
|----------|---------|-----------|------------|

Saturday, December 06, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 14:21:00 | 334.6° | +5.0°  | +10 KHz |
| 14:24:00 | 346.3° | +23.1° | +5 KHz  |
| 14:27:00 | 62.4°  | +53.5° | 0       |
| 14:30:00 | 125.8° | +20.8° | -5 KHz  |
| 14:33:00 | 135.9° | +3.9°  | -10 KHz |

Sunday, December 07, 2003 (UTC)

|          |        |        |        |
|----------|--------|--------|--------|
| 04:39:00 | 163.1° | +10.3° | +5 KHz |
| 04:42:00 | 121.5° | +22.7° | 0      |
| 04:45:00 | 69.7°  | +15.2° | -5 KHz |
| 04:48:00 | 48.4°  | +2.8°  | -5 KHz |

|          |        |        |         |
|----------|--------|--------|---------|
| 14:51:00 | 322.9° | +3.5°  | +10 KHz |
| 14:54:00 | 315.0° | +20.5° | +5 KHz  |
| 14:57:00 | 254.0° | +56.9° | 0       |
| 15:00:00 | 172.5° | +24.1° | -5 KHz  |
| 15:03:00 | 162.8° | +5.3°  | -10 KHz |

Monday, December 08, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 05:06:00 | 203.1° | +0.5°  | +10 KHz |
| 05:09:00 | 199.1° | +15.8° | +5 KHz  |
| 05:12:00 | 163.5° | +60.0° | 0       |
| 05:15:00 | 42.6°  | +27.2° | -5 KHz  |
| 05:18:00 | 35.6°  | +6.1°  | -10 KHz |

Sunday, December 14, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 03:06:00 | 189.7° | +0.2°  | +10 KHz |
| 03:09:00 | 177.9° | +14.0° | +5 KHz  |
| 03:12:00 | 129.5° | +36.5° | 0       |
| 03:15:00 | 59.7°  | +20.8° | -5 KHz  |
| 03:18:00 | 42.7°  | +4.4°  | -10 KHz |

|          |        |        |        |
|----------|--------|--------|--------|
| 04:48:00 | 247.1° | +3.4°  | +5 KHz |
| 04:51:00 | 270.6° | +16.7° | +5 KHz |
| 04:54:00 | 325.5° | +23.9° | 0      |
| 04:57:00 | 6.2°   | +11.0° | -5 KHz |

| Time (Z) | Azimuth | Elevation | Rx Doppler |
|----------|---------|-----------|------------|
| 13:21:00 | 317.7°  | +2.4°     | +10 KHz    |
| 13:24:00 | 303.6°  | +16.8°    | +5 KHz     |
| 13:27:00 | 252.4°  | +35.6°    | 0          |
| 13:30:00 | 192.3°  | +19.8°    | -5 KHz     |
| 13:33:00 | 175.3°  | +4.3°     | -10 KHz    |

Monday, December 15, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 03:36:00 | 214.5° | +0.3°  | +10 KHz |
| 03:39:00 | 217.7° | +15.5° | +5 KHz  |
| 03:42:00 | 242.7° | +61.4° | 0       |
| 03:45:00 | 22.9°  | +29.1° | -5 KHz  |
| 03:48:00 | 29.0°  | +6.7°  | -10 KHz |

Sunday, December 21, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 01:36:00 | 201.1° | +1.0°  | +10 KHz |
| 01:39:00 | 195.7° | +16.7° | +5 KHz  |
| 01:42:00 | 148.5° | +58.8° | 0       |
| 01:45:00 | 44.7°  | +25.2° | -5 KHz  |
| 01:48:00 | 36.5°  | +5.4°  | -10 KHz |

Monday, December 22, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 02:09:00 | 234.5° | +13.4° | +5 KHz  |
| 02:12:00 | 275.6° | +41.8° | 0       |
| 02:15:00 | 5.1°   | +26.4° | -5 KHz  |
| 02:18:00 | 22.8°  | +6.7°  | -10 KHz |

Sunday, December 28, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 00:06:00 | 212.7° | +1.3°  | +10 KHz |
| 00:09:00 | 215.0° | +17.5° | +5 KHz  |
| 00:12:00 | 240.8° | +71.5° | 0       |
| 00:15:00 | 26.8°  | +26.4° | -5 KHz  |
| 00:18:00 | 30.3°  | +5.7°  | -10 KHz |

|          |        |        |         |
|----------|--------|--------|---------|
| 22:57:00 | 179.1° | +4.2°  | +10 KHz |
| 23:00:00 | 156.3° | +19.4° | +5 KHz  |
| 23:03:00 | 93.9°  | +27.2° | 0       |
| 23:06:00 | 54.6°  | +11.0° | -5 KHz  |

Monday, December 29, 2003 (UTC)

|          |        |        |         |
|----------|--------|--------|---------|
| 00:39:00 | 248.5° | +10.6° | +5 KHz  |
| 00:42:00 | 287.6° | +28.1° | 0       |
| 00:45:00 | 353.1° | +21.5° | -5 KHz  |
| 00:48:00 | 17.4°  | +6.0°  | -10 KHz |

Please feel free to contact me if you have any questions.

73 Tom n0ntx, 570-1465 or n0ntx@amsat.org

(Continued from page 1)

folded dipole elements, 120 feet high. Inside the inner array is a reflecting screen. It is made of approximately 700 vertical copper wires suspended from 80 90-foot poles. A similar, but shorter, reflecting curtain for the outer verticals is located between the two antenna arrays. As you might have gathered by the dimensions of the individual antennas, the outer array covers the higher frequencies (above 8 MHz, to approximately 30 MHz from what I can gather from unclassified sources), while the lower band covers 2 to 8 MHz. The entire array sits on a ground screen approximately 1300 feet in diameter!



Each antenna element is fed with very low loss 75-ohm coax cable. The cables all enter a large 2-story concrete operations building located in the center of the array. Without going into a lot of detail of how the array is “steered”, suffice to say that the system phases the various antenna elements to create large phased arrays at the desired frequencies. When searching for signals the standard beamwidth is 30 degrees. When monitoring, 15 degrees is the standard beamwidth. Although I can’t find anything about the array’s discrimination when in the direction finding mode, I would imagine that it would be accurate to within a few degrees. This is one fantastic antenna system!

The AN/FLR-9 is similar, but has a third array of elevated horizontal dipoles to give expanded frequency coverage. It is apparently much trickier to build and adjust however. The cost to build the average FLR-9 is said to be 15-25 million dollars! This really is one fantastic antenna system!

With the end of the Cold War, many Wullenweber arrays have been decommissioned and scrapped. I do know that there are still several in service in the USA, Canada and Great Britain. Their days may be numbered however. Modern Digital Signal Processing (DSP) techniques can accomplish the same without the huge investment in antenna arrays, and satellites can maintain surveillance over sensitive areas from space. I wonder how much it would cost to buy a decommissioned Wullenweber and press it into service with my HF rig?!

## Radio Operating Practices

What we should teach our new hams.

### Simplex Operation and Repeaters

“After you have made a contact on a repeater, move the conversation to a *simplex* frequency if possible. The easiest way to determine if you are able to communicate with the other station on simplex is to listen to the *repeater input frequency*. Since this is the frequency that the other station uses to transmit to the repeater, if you can hear his/her signal there, you should be able to use simplex. Many radios include a reverse feature. With a push of a button or other control you can listen on the normal transmit frequency. This is a very useful feature for checking to see if you can operate on simplex with the other station.”

‘Now You’re Talking, page 2-6’

By utilizing an open simplex frequency you free up the repeater for other stations to use. You also will gain some privacy in that the simplex frequency will not be monitored like the repeater is. Moving to an open simplex frequency is made easy if you have them programmed into your radio before they are needed.

## 2004 Swapfest!

Kate, WB9BAH Swapfest Chair

Planning for 2004 Swapfest is beginning! The first planning meeting will be December 6, 2003 at 9 am at the Falcon Police Station, 7850 Goddard St. All club members are invited to be a part of the groundwork for next summer’s Swapfest.

(Continued on page 11)

# The Amateur Radio Crossword Puzzler

By H. Ward Silver, NOAX

Waiting for Baudot

This puzzle's theme is the digital modes--all their bits (and bytes) and ins and outs. Think of the various layers that all get involved in making your computer talk to my computer. Herein lie the names of methods and actions as well as things. Ready? Initiate!

## Across

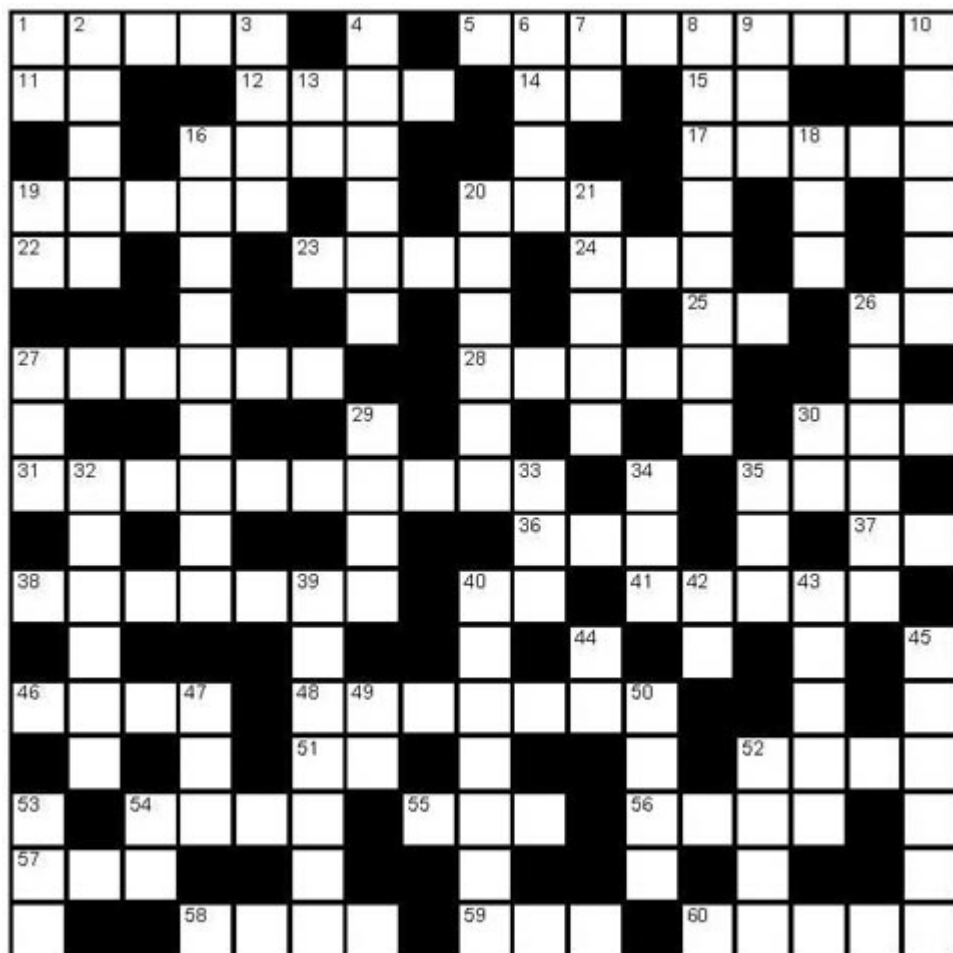
1. Predecessor to Windows
5. Packet relay
11. Weight (abbr.)
12. Branching network
14. Morning (abbr.)
15. Long-time ham (CW abbr.)
16. Attempt to contact
17. A video camera does this to the image
19. Mistake
20. Young reporter
22. From (CW abbr.)
23. Frequency determining element (abbr.)
24. Control - ... - Delete
25. Department in charge of computing services

26. Afternoon (abbr.)
27. Board in a computer
28. Signal containing a picture
30. Acknowledge (abbr.)
31. These make up text
35. Modulation for teletype
36. Automatic Link Enable (abbr.)
37. No longer (prefix)
38. Access port between networks
40. Not yours
41. Discrete change in frequency
46. Assist
48. Opposite of analog
51. Radio Frequency (abbr.)
52. Unit of current
54. A raster is made of these
55. Dial-up information server
56. Packet host
57. Select or change

58. Not slow
59. Type of digital gate used for randomizing
60. Inquired of

## Down

1. Medium Wave (abbr.)
2. Save
3. Network connected to a central point
4. Erase
6. International Amateur Radio organization
7. Good Morning (CW abbr.)
8. APRS reports this data
9. And so forth (abbr.)
10. Collection of connected parts
13. Resistor-Inductor circuit (abbr.)
16. First name of the inventor of SSTV
18. Ham Television (abbr.)
19. Editor (abbr.)
20. HF digital modulation using four sub-bands
21. Amateur allocations
26. Digital mode using AX.25 protocol
27. Slang for Apple computers
29. Oldest digital mode (abbr.)
30. Stand by (CW abbr.)
32. Beginning of a data packet
33. Speak
34. Not no
35. For you to know (abbr.)
39. Network location
40. Storage place for incoming messages
42. Frequencies between 3 and 30 MHz (abbr.)
43. Data set on a link
44. One-thousand of an ampere (abbr.)
45. Shoved
47. Greek letter
49. Intermediate frequency (abbr.)
50. Network connection
52. Sums
53. Received and understood (abbr.)
54. Light (abbr.)



Copyright © 2003, American Radio Relay League, Inc. All Rights Reserved, used with permission.

## Public Service Communications



### ARES

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

VHF Net Tuesdays at 1900 on the 146.97 MHz  
PPFMA repeater

Sid White K4ARM, PPARES EC

No updates this month



### RACES

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

VHF Net Tuesdays at 1930 on the 146.76 MHz  
CMRG repeater

Les Borst KCØNC, RACES Officer

Our RACES group is continuing with work to upgrade our antenna feeds and radios.

This time of the year with many celebrating with friends and family and putting up decorative lights, the biggest threat now is fire. Just the other night I read of a house fire do to fire place ashes left on a wood porch. I know that this sounds like the worst possible scenario for a fire, but similar things cause's home fires daily. This brings me to a fire department request we should all heed, that is to change the batteries in your smoke alarms. This could save your life as well as the lives of your family.

Due the many family commitments during the holyday season, it has been decided that we will not have a December training meeting. So everyone have Mary Christmas and a Happy New Year.

Our next meeting will be January 15, 2004 at the County OEM at 7:00 PM.

*(Continued from page 6)*

and we've even heard from the guys in VAIL from their remote base on top of Vail Mountain.

Right now, the repeater is open access, but will use 107.2 Hz tone when conditions warrant. May as well program that tone into memory with the repeater frequency. Eventually, this repeater will be tied into the CMRG VHF system.

Many thanks to Dave Newmeyer, N0KM; Ed Nichols, KC0PZE; and Dave Novotny, WA6IFI for braving road up Fremont Peak (yes there is snow on the road) and installing the repeater. We will have pictures on the website later this week. Give the NEW 145.295 a try!!!

### Hello Zero Beat Readers,

My name is John Hasling and I am the treasurer for the 2004 club year. My call is K0AAI.

I have been a member of PPRAA since 2000. I was first licensed in 1954 as a Novice. My call at that time was KN0AAI. I am now an Extra Class. I did not give up my interest in Ham radio but was not active. I spent one and one half years in the U.S. Naval Reserves. Left that and joined the U.S. Air Force. Spent 4 years doing several electronic things. Ended up maintaining test equipment. Since the Air Force, my working career has been involved with many aspects of test equipment. From design to selling to marketing, manufacturing and cleaning up all the messes I made. I am mostly an analog person but do have some digital experience. I also earned a BSEE from UCCS. I retired after 23 years with HP/Agilent Technologies. At this time I am trying to assemble a R8 vertical antenna. There are many, many pieces to this kit. Thanks to the generous help I get from my XYL, Arlene, it is about finished. I also spend a great deal of time fiddling around with my computers. This drives Arlene crazy. If you want to know any thing else about me, send an e-mail to [k0aai@arrl.net](mailto:k0aai@arrl.net).

## Amateur Technician Classes

Amateur Radio Classes will be conducted by Frank McNally, KFØWF, at the Office of Emergency Management, 305 South Union Blvd., Colorado Springs, CO. The classes are designed to gain an entry level "Technician" class Amateur License issued by the Federal Communications Commission. The classes will be held on Tuesday and Thursday evenings from 7 PM to 9 PM, beginning on Tuesday, January 13, 2004 and ending on Thursday, February 12.

The class consists of 9 lecture sessions that teaches FCC Rules and Regulations, and electronic principles needed to pass the FCC "Technician" class test. The last class will be used to administer the FCC examination to test the student's knowledge of the materials covered in the class. Upon completion of the class and subsequent passing of the FCC examination, the student will be able to operate all modes of communications on all amateur frequencies above 50 MHz. This includes the AM, FM, data, television, satellite, internet and remote control modes of communications. The "Technician" Amateur License does not

require the student to demonstrate proficiency in International Morse Code; however, if there are enough interested students, a Morse Code Class will be offered.

The cost of the class will be \$19.00 for the Amateur Radio Relay League text book; "Now You're Talking, 5<sup>th</sup> Edition" and \$12.00 administration fee for the examination. People interested in taking the class should contact Frank or Barbara McNally at (719) 596-8733 or via email at warm.fuzzy@bigfoot.com.

(Continued from page 8)

Many decisions will be made at this meeting. The date of the Swapfest will be discussed and determined (June 5<sup>th</sup> or June 12<sup>th</sup>) and the location will also be up for discussion. Also raffle prizes will be discussed. If you have an idea for prizes, bring the specifics and a rough price idea of the items.

So mark your calendars for every first Saturday of the month until June to take part in the exciting planning of the state's largest swapfest!

### Membership Application for the Pikes Peak Radio Amateur Association, Inc.

P.O. Box 16521, Colorado Springs, CO 80935-6521

Date: \_\_\_\_\_ ☐ New Member ☐ Renewal

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Call: \_\_\_\_\_ Class: N T + G A E Phone: \_\_\_\_\_

Mbr of ARRL? ☐ Yes ☐ No E-mail: \_\_\_\_\_

Additional Family Members to Join/Renew:

Name: \_\_\_\_\_ Call: \_\_\_\_\_ Class: \_\_\_\_\_ ARRL? \_\_\_\_\_

Name: \_\_\_\_\_ Call: \_\_\_\_\_ Class: \_\_\_\_\_ ARRL? \_\_\_\_\_

Name: \_\_\_\_\_ Call: \_\_\_\_\_ Class: \_\_\_\_\_ ARRL? \_\_\_\_\_

In which activities would you like to participate?

Field Day ☐

Demonstrations ☐

Nets or round tables ☐

Organize activities ☐

Teach ham classes ☐

Full Member \$15: ☐

Family Membership \$18: ☐

Over 65 \$10: ☐

Over 65 Family \$12: ☐

Associate \$12: ☐

Ø-Beat Only \$12: ☐

Donation to Club: \$ \_\_\_\_\_

Total Enclosed: \_\_\_\_\_

**MAKE ALL CHECKS PAYABLE  
TO "PPRAA"**

**Please indicate how you'd like your Ø-Beat delivered:**

(Defaults to standard hard copy in the event that NO check boxes are checked)

☐ Standard hardcopy via U.S. Mail

☐ As a PDF file attachment via e-mail, to help save a few bucks

☐ I'll save the club a few bucks and download it from the Web!

Circle your interests Ø HF / V/UHF / FM / SSB / Digital / DX / Contests / Technical / Hardware / Other \_\_\_\_\_

New and renewing members must submit a completed application form along with your check to the Treasurer.

**Please Type or Print Clearly!**

**ALL NEW MEMBERSHIPS AND RENEWALS WILL BE PRORATED TO EXPIRE IN DECEMBER!!**

## Classifieds

To place a classified ad please email to [KC0NRZ@ARRL.NET](mailto:KC0NRZ@ARRL.NET). Ad should be short and concise. Remember to include a phone number and email address.

### Jess Miley KØTAA

719 W 7th, Florence, CO, 81226 719-784-3040

Amateur & Hobby Radio Products. We Trade

30 day money back guarantee on used equipment.  
Excellent Tech @35 per hour, Commercial rates higher

Please call before you drive

## Membership Committee Report

Les, KCØNC

### Please welcome these New Members

BRIAN GAUCK KC9EMW

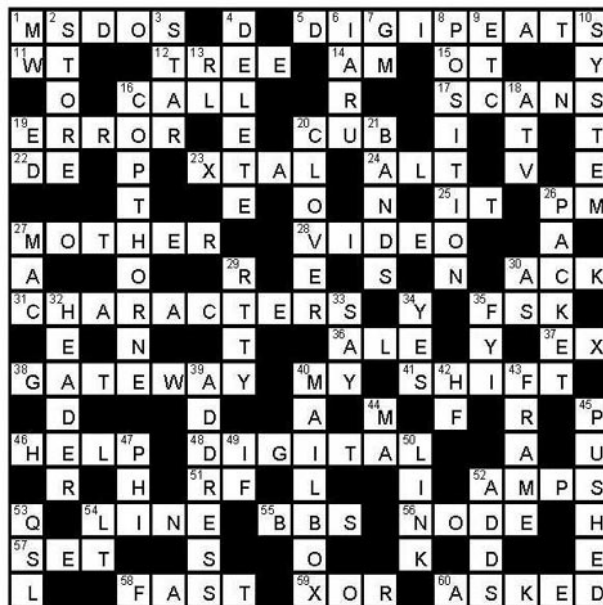
DON NOFFSINGER K7CIF

### Total Number of Members

178

## Pikes Peak Region Ham Radio Events

| Date   | Event   |
|--------|---|
| Dec 6  | 0900 Swapfest planning meeting at the Falcon Police Station |
| Dec 12 | 1900 PPRAA Christmas Party (In place of meeting)            |
| Dec 13 | 0900 PPRAA VE Testing                                       |
| Dec 15 | 1900 PPRAA Board Meeting                                    |
| Dec 18 | 1900 Races meeting  |



**Pikes Peak Radio Amateur Association, Inc.**  
**P.O. Box 16521**  
**Colorado Springs, CO 80935-6521 USA**

**First Class Mail**

**To:**