

IN-SERVICE



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The President's Column:

PROBLEMS WITH BPL

BPL stands for "Broadband over Power Line," and refers to the technology of providing broadband (including Internet access) using power lines as the transmission medium. The problem with these systems is that the lines in the nation's (indeed the world's) power grid are typically overhead, representing an enormous radiating antenna grid. As such, "BPL systems pose a significant interference potential to over-the-air radio services. Amateur Radio is not the only potentially affected service from these types of systems. Studies done by amateurs in Europe, Japan and the US leave little doubt that access BPL that uses overhead electrical distribution wiring poses an interference risk to HF." (<http://www.arrl.org/tis/info/HTML/plc/>).

The "Broadband Over Powerline Interference Resolution Web Site" at <http://www.bpldatabase.org/> has been provided "in accordance with Federal Communications Commission regulations (47 C.F.R. 15.615), and is designed to make searching as simple as possible. All you need to do is enter your zip code to see if a BPL system is operating nearby." As it turns out, the web site allows only five zip codes to be searched. On the sixth attempt, you will get the error message "Your search limit has been exceeded, though you may try again later."

I checked this web site to determine what Center Place zip codes might be affected by BPL deployments. The web site reported there are currently "No BPL Operations Found" for Independence, Missouri zip codes 64050, 64051 and 64055. I also found there are no BPL operations in the Lamoni, Iowa area (zip code 50140), nor in West Des Moines, Iowa area (zip code 50322). That is good news, particularly for Independence, Missouri, because BPL could pose a significant risk to the ability of our Center Place station WØSHQ to provide emergency HF communication services; either for a situation occurring in the Center Place, or as a service to other affected areas of the country, or the world.

At its July 16, 2004 meeting in Windsor, Connecticut, the ARRL Board acknowledged the need to 'immediately begin a BPL grassroots lobbying campaign' this year. (See <http://plk.arrl.org/~ehare/bpl/guidance.html> for "ARRL Guidance for those Involved in BPL Field Trials". I encourage ASCRA members to check the BPL Interference Resolution Web Site (<http://www.bpldatabase.org/>). If you find BPL is being deployed in your area, I encourage you to become involved, due to the very real potential for interference with Amateur Radio HF communications; especially emergency communications. The ARRL Guidance web site referenced above provides a procedure for Amateur Radio operator involvement.

If you become involved, we would love to hear about it. Please consider writing your own article for the ASCRA In-Service, describing BPL developments in your area, and efforts to provide an effective response. The ARRL Letter often includes such articles regarding BPL. The following article is excerpted from The ARRL Letter, Vol. 25, No. 18 (available online at <http://www.arrl.org/arrlletter/06/0505/>) regarding BPL interference in Manassas, Virginia.

73 de kgøii
Bob Farnham, ASCRA President

NEW BPL COMPLAINT ARRIVES AS ARRL NUDGES FCC TO ANSWER EARLIER FILINGS

The ARRL Letter, Vol. 25, No. 18 (available online at <http://www.arrl.org/arrlletter/06/0505/>) tells the experience of Arthur R. Whittum, W1CRO, a radio amateur from Manassas, Virginia. BPL interference made it impossible for him to operate his mobile station on 40-meter SSB along a 2-mile distance on a transit of the streets of Manassas. Even strong signals were unintelligible, and he could not determine the source or its net control to register a complaint with them. He registered his third complaint to the FCC in a letter dated May 4, 2006.

The ARRL has received several complaints similar to that of W1CRO and filed them with the FCC's Spectrum Enforcement Division. A grass-roots campaign has been instituted to encourage ARRL members to file complaints when such problems occur. Similar problems have been reported from other locations where BPL systems are in use.

The ARRL has written to the FCC saying it wants to know when it can expect the FCC to require BPL system operator COMTek, equipment maker Main.net and the City of Manassas "to comply with the Commission's rules governing radiated emissions and the non-interference requirement of 15.5 of those rules."

The FCC Spectrum Enforcement Division has contacted COMTek about the problem at Manassas, and COMTek has filed a response saying that they do not believe that the BPL system is causing the interference. However, the interference has continued to occur.

In a consolidated complaint on behalf of Tarnovsky, Blasdell and South filed October 13, the ARRL asked the FCC to order the BPL system shut down "until the operator can demonstrate compliance with the requirement that it not cause harmful interference to licensed radio services."

Summarized from the ARRL Letter, Vol. 25, No. 18

REVITALIZING ASCRA

All organizations go through a life cycle characterized by the following stages or periods:

1. high-energized activity
2. maintaining the flow
3. low energy activity
4. revitalization
5. renewed high energized activity.

Some organizations build periodic activities into the life of the organization to revitalize and re-energize the organization in a periodic and cyclic way. Examples within amateur radio are activities like Field Day and various other on-the-air contests. ASCRA is looking for similar ideas. I am calling this an open source approach because I am inviting all readers of In-Service to consider my ideas and to propose ideas of their own by which we can generate activity and interest in amateur radio as a service organization within the church.

My suggestion is an outgrowth of on-the-air discussions concerning this topic and discussions at the 2006 Board Meeting of ASCRA recently held in Kansas City Missouri. Part one has to do with the reporting structure of ASCRA. Part two has to do with the method by which we organize and join ASCRA's various nets.

Part one. Last year ASCRA members were very active in their support of various aspects of the relief effort following Hurricane Katrina. Doug Shaw, WAØEMX, operated WØSHQ on a scheduled basis, and was part of the SATERN Net operated by the Salvation Army over an extended period of time. Doug became a clearing-house for ASCRA member activities and ultimately filed a report with church headquarters. Nationally, regionally, at the state level, county and city by city, amateur radio received high praise for services rendered leading up to and following Katrina. However, in the final report from the church, amateur radio in general and ASCRA in particular, were not mentioned. In the discussion at the board meeting it was surmised this occurred because ASCRA lacks structure that conforms to the structure of the various jurisdictions of the church. We failed to report our activities by state, or more importantly in a mission center oriented manner. That made it difficult for our activity information to be included in the church report. My proposal is a simple one. I propose that we organize our activity report, as published in In-Service, by mission center. For example, in the past you only saw my activity reported as a call sign, W6LMJ, in the future I suggest we organize the activity report to reflect mission center, call sign, and name. Thus my activity would be reported as Florida Mission Center, Terry Redding, W6LMJ.

If done correctly, over time I believe mission centers will take note and gain a sense of pride that their mission centers contain amateur radio operators who can and do, in an emergency, assist in communications. Further, this reporting activity should make it easier for church headquarters to include amateur radio activities in its standard reports. Ultimately, it is hoped, more ASCRA stations will become active to be in a better position to render emergency communications as needed, and to see their name and call sign posted in conjunction with their mission center. Further, it

will aid the mission centers and the church in becoming aware of just who the hams are within their various jurisdictions.

Part two of my proposal is an effort to encourage ASCRA members to establish, increase their ability to assist in times of communications and emergency, and to steadily improve their individual and station capabilities. While the ideal is subject to refinement, the concept is simple. I propose we define an ideal ASCRA station and then encourage our members to work steadily to improve their personal amateur radio stations, moving towards and ultimately achieving that ideal. I propose the following as a starting point for describing an ideal ASCRA station:

- * First, it should be in regular use.
- * Second, it should be capable of emergency operations during times of disaster.
- * Third, it should be capable of communicating on as many bands as possible.
- * Fourth, it should be capable of using as many modes of communications as possible.
- * Fifth, it should be capable of integrating its communications via such tools as phone patches, packet messaging, Echo Link, APRS, etc.
- * Finally, it should have directional antennas and be able to run high power as needed.

ASCRA station capabilities should be known and reported on a regular basis and could be made a part of the standard login of ASCRA nets, and the activity report in "In Service." Such a report, using my station as an example would be: Florida Mission Center, Terry Redding, W6LMJ, HF/VHF/UHF/PP No/Packet No/APRS Yes/HP Yes/Dir Ant Yes/Emergency power Yes. A form of shorthand could be used on the air to report the various capabilities in binary form such as a 1 for yes and a 0 for no. Such a short hand report for my station would look like this 1/1/1/0/0/1/1/1/1 Dropping the slashes, it could be stated as 111,001,111, and said as one one one zero zero one one one one on the air.

I would also like to see a new annual award initiated at ASCRA for working all mission centers and working all jurisdictions. Each year, those achieving the goal, or coming the closest could be recognized. Let's have some fun while being prepared to respond to the communications needs associated with the widest array of potential disasters.

Terry

TREASURER'S REPORT

Income for year 2005-2006:	
Donations	633.00
Expenses for year 2005-2006:	
In-Service printing and postage	567.52
Sports Spectacular VEC exams	108.00
PO Box 73	38.00
MO Department of Revenue	15.00
Total expenses	728.52
Net effect on reserve fund	(95.52)
General Reserve Fund current balance	421.05

BURIED CONDUITS

I have heard electricians say that eventually all buried conduits fill up with either water or dirt. Even if sealed at both ends there are things such as condensation to deal with. As long as one end is outside above ground there will be temperature differences that will allow condensation to build up. If left unplugged in order to let it breathe, then mice or other animals are always a problem.

Make sure the conduit is rated for direct burial. I know that NEC requires junction boxes every so often but I don't like them. If a good quality pull string, or even better wire, is left inside even after some wires are pulled, then the boxes are unnecessary. I have used a vacuum cleaner to blow or suck a cotton ball tied to a string through conduits. I believe that in one case it managed to get past the pull boxes that were installed. It was on the order of 250' to 300'.

With a long pull wire, lube is almost always required. It gets messy on the feed end. For wire length, I always over-estimate because I seem to always misplace my wire stretcher at the wrong time. Always pull all the wires at the same time. It is nearly impossible to pull additional wires through a partially filled conduit. If necessary to add wires then pull all wires out, add the new wires, and pull them all back into the conduit.

When preparing the wires to pull, make sure that the end is round so that it won't snag on junctions. Usually the wire likes to bend over toward one side which can cause it to snag on joints and junction boxes. If necessary to install bends, make sure they are sweeps and not 90 degree bends. Sweeps will allow even fiber optic cable to be pulled into conduit. I have pulled in runs of about 200' of fiber optic cable intra- and inter- buildings using sweeps. You can cut 90 degree sweeps with a hacksaw to achieve less than a right angle.

With an installation far away from the house, don't forget to drive a ground rod at both the tower and the house ends of the run. All cable should be grounded or protected at both ends. The house end should also have its ground rod tied to the electrical service entrance to eliminate any voltage differentials between grounds. A #6 ground wire in the conduit would not be overkill to insure that the grounds are tied together.

Remember that braided coax is like Chinese handcuffs. It will handle an enormous amount of pull. Other wire will not handle nearly the pull. A couple of chairs with a broom handle placed strategically will allow the spools of wire to run freely as the wire is pulled.

That's all I can think of right off the bat. Experience is the best teacher. I have learned more when I had problems than when everything went smoothly.

Robin, wøfen

PRACTICE FOR LICENSING EXAMS

Use the Resources "Ham Exams" hot link to practice FCC Amateur licensing exams at <http://www.eham.net>. Lots of other interesting Ham Radio information is available on this website.

73 -Doug wøemx

20-METER NET CHECKINS

This is the list of checkins on the ASCRA 20M net from the notes sent by others who cared for the net. A few call signs had errors so some were lost.

Net is held 3:30PM CDT, Sundays on 14.287 MHZ.

Ernie, WB2UJL

NØAIX, Larry Ragan WAØCXW, William Griep
NØELM, Fred Troeh WØFEN, Robin Cross
WBØGQM, Vern Wirka KBØGR, Dave Bland
KØGSV, Richard Zysk WAØIBS, Andy Ferrar
KGØII, Bob Farnham MIØJBT, Jim Traynor
KØJIM, Jim Hanson KØSEX, Melvin Amick
WØSHQ, Robin, Auditorium NØWZH, Steve Hampton
KGØXU, Michael Hahn
N1IZE, Darrel Guberman K1MAR, Nic Georgis
F1RFV, Jacqsel Reix
W2FEZ, William Hood KC2IVZ, Lyel Podber
KC2JDS, Wael Zeidan WB2UJL, Ernie Miles
W2TFT, Tom Thatcher
VK3AQN, Fred Naylor KB3NGA, Jason Griffen
N4CPM, Edward Kirkpatrick W4CYF, Jim Bishop
K4LSU, Joseph Klimczak KA4RUR, Frederick Carslick
N5AUK, Ed Higganbothem N5LCL, Dave Gates
KA5OIR, Jack Young W5QPT, Ellis Thatcher
WB6QBF, Mike Amklam W6LMJ, Terry Redding
W6RWH, Hale Collins W6WTG, William Godley
KL7IXI, Michael Fletcher K7NCG, Jim Fish
VE7RAL, Ralph Melville N7ZA, Bruce Wade
W8BAB, Arnold Lemke W8GVB, Marion OH Radio Club
AB8NZ, Donald Hawk K8QA, Mike Oiler
W8QK, Muirl Robinson N8YZQ, Mike Grimm
KC9HYV, William Stokes N9OJH, Lonnie Whitfield
WB9SFM, Morris Jones

MILO BARNHARD REPEATER CONTRIBUTION

This letter is in response to ASCRA's letter of appreciation for the repeater Milo Barnhard provided for use at WØSHQ/R. He loaned the repeater to us for several years and now has made it a gift.

Robin Cross WØFEN 8 May 06
Executive Director
Association of Saints Church Radio Amateurs

Dear Robin:

Thanks for your appreciation certificate for the 2 meter repeater. I will be 85 years this year and my ears are going very bad but always try to help in any way.

Again Thanks and TNX
(signed)
Milo Barnhard Jr.
Lt. Col. USAF Retired Aux.

METER ACCURACY

I was reading some articles/responses on eHam and it struck me that nearly everyone uses the BIRD 43 Wattmeter as a "standard." Included in the use of a standard is assumed accuracy. The only accuracy that Bird guarantees is $\pm 5\%$ of FULL SCALE. This means that if you are measuring 25 Watts using a 100 Watt slug then the measurement could be from a low of 20 Watts to a high of 30 Watts. The same applies using a 1000 Watt slug and measuring 250 Watts but with a low of 200 Watts and a high of 300 watts. This translates to an accuracy of 20% for measuring 25 Watts and reading either 20 Watts or 30 Watts. Assume that we measure a 100 Watt output HF transceiver using a 1000 Watt slug. The accuracy is 50 watts or 50%. For the best accuracy, the measured power needs to be close to but not over the maximum reading of the slug.

Here is the link to Bird's web site:

<http://www.bird-electronic.com/products/product.aspx?id=81>

How does this affect common Ham Radio measurements? Suppose that you are measuring VSWR. If you are using the same slug to measure forward power and reflected power, what is the accuracy? With a 100 Watt output HF transceiver we will use a 100 Watt slug. We have a FULL SCALE reading. Therefore the accuracy is 5% or 95 to 105 Watts. This is not bad. Now we reverse the slug to measure the reflected power. Suppose that we read 5 Watts but the accuracy is only guaranteed to be 5 Watts. We might have either ZERO Watts or TEN Watts reflected or anything in between. To get a close to accurate reflected power a lower power slug must be used. It is common to use a 10% or less slug in Broadcast measurements. Using a 10 Watt slug for the reverse measurement, we would get a 5 watt reading with an accuracy of 0.5 Watts. This would be good. A high of 5.5 Watts, a low of 4.5 Watts or anything in between.

Let's look at several scenarios:

Forward	Reflected	VSWR
100	0	1.00
95	5	1.60
100	5	1.58
105	5	1.56
95	10	1.96
100	10	1.92
105	10	1.89
95	4.5	1.56
100	4.5	1.54
105	4.5	1.52
95	5.5	1.63
100	5.5	1.61
105	5.5	1.59

The first entry is for reference only. Obviously with zero reflected the VSWR is 1:1. Reference ones have been left off for simplicity. As can be seen from the figures, IF there is truly 100 Watts forward and 5 Watts reflected, then depending on the measurements a low VSWR of 1.54 to a high of 1.96 is calculated. Without taking the absolute accuracy of the Wattmeter into account, one might be inclined to think that the antenna is either far worse or far better tuned than it really is. This is with SAME forward and reflected powers. The only difference is the measurements of those powers.

Included in the above chart is the additional problem that the forward slug might be at the high side of the 5% accuracy and the reflected slug might be on the low side. Obviously any combination is possible as well as an inaccuracy less than 5%.

The way to interpret this:

When reading power it must be said that it is ABOUT or NEAR X Watts. Remember the CB VSWR meters that you sometimes see at garage sales or Hamfests. They usually don't have any calibrations on them. They are meant to be RELATIVE meters. After all VSWR is a RATIO not a absolute value.

Fluke meters are very common and sometimes used for a "standard." Their stated accuracy depends on what the meter is measuring: Voltage DC, Voltage AC, Current DC, Current AC, Resistance, or Capacitance. The low is $\pm 0.05\%$ and ± 1 count. The high is $\pm 1.2\%$ and ± 2 counts. The \pm count is because it is a digital meter. These accuracies are much better than for the Bird Wattmeter. What is the difference? The Bird Wattmeter is a passive device that uses some of the energy to produce the indication. The Fluke multi-meter is an active device that only affects the measurement by the loading on the circuit. The same comparison is true of the VOM and the VTVM (or now a DVM such as the Fluke meter).

Here is a link to Fluke meters:

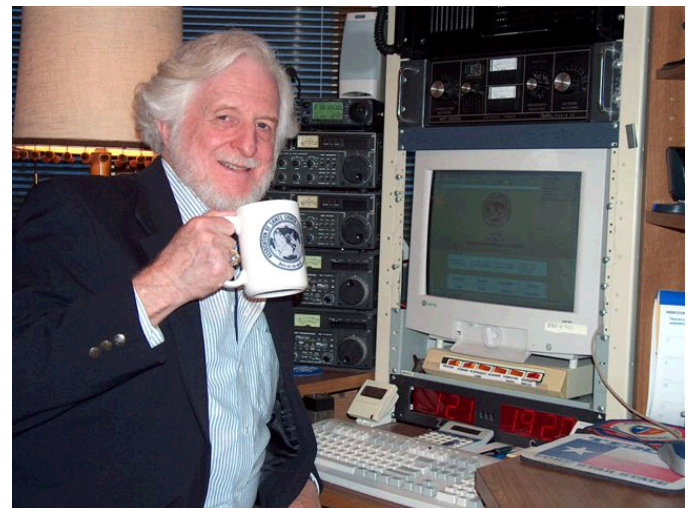
[http://us.fluke.com/usen/products/specifications.htm?cs_id=34473\(FlukeProducts\)&category=HMA\(FlukeProducts\)](http://us.fluke.com/usen/products/specifications.htm?cs_id=34473(FlukeProducts)&category=HMA(FlukeProducts))

If the meter uses a battery to power itself, then the accuracy SHOULD be better than powered from the circuit. Note this is a best case. A cheap powered meter might be less accurate than a precision passive meter.

It is always best to check the published accuracy of the meter. This still might be only an average of production meters. I know that Fluke meters can be calibrated to NIST standards in which case they are more accurate than the published figures.

The old saw that it is impossible to measure an amount without affecting it holds true here.

Robin, wøfen



David Bland (KBØGR) relaxes at his operating position enjoying the ASCRA mug he won as a door prize while attending this year's ASCRA Board Meeting.

ASCRA BOARD MEETS AT KCUR-FM

At 0911 CT on Saturday, April 29, 2006, through the auspices of Executive Director, Robin Cross WØFEN, the annual meeting of the ASCRA Board of Directors convened at the offices of KCUR-FM, National Public Radio station operated by the University of Missouri - Kansas City (UMKC). Secretary Doug Shaw presided in the president's absence as provided in the bylaws.

Following an invocation by Terry Redding, those attending introduced themselves to our new director, Mike Oiler K8QA. ASCRA members Lisa Gates N5VFA and David Bland KBØGR (ASCRA's organizing president and executive director) also attended as guests.

Nine members of the board attended, satisfying the quorum of six required by the bylaws:

David Gates, N5LCL, Newcastle, OK
Mike Oiler, K8QA, Liberty, MO
Terry Redding, W6LMJ, West Palm Beach, FL
Tom Thatcher, W2TFT, Shawano, WI
Fred Troeh, NØELM, Ames, IA
Robin Cross, WØFEN, Kansas City, MO
Michael Hahn, KGØXU, Independence, MO
Ernie Miles, WB2UJL, Apalachin, NY
Secretary, Doug Shaw, WAØEMX, Raytown, MO

Three directors could not attend:

President, Bob Farnham, KGØIL, Lamoni, IA
Treasurer, Chuck Palmer, NØONN, Independence, MO
Director, Muirl Robinson, W8QK, Bald Knob, AR

The secretary presented the formal report of the Even Year Class election results for the Board of Directors. A letter or E-mail of appreciation will be sent to Bud Resch WØFTD, the one right-in candidate, for his willingness to serve on the board. The Board then reelected each of the following officers for 2006-2007, all by acclamation:

Bob Farnham, KGØIL, President
Doug Shaw, WAØEMX, Secretary
Chuck Palmer, NØONN, Treasurer

The secretary then read the president's statement reappointing Robin Cross WØFEN as Executive Director, to which the board unanimously passed a concurring motion.

Following approval of the corrected minutes for the June 2005 meeting, the annual Secretary's (Activity) Report, 13 major items this year, was presented and accepted.

The Secretary then presented the Treasurer's report and proposed budget for 2006-2007, noting that this is the third year requiring deficit spending to fulfill the budget, further reducing ASCRA's small reserves. The following budget was approved without amendment:

IN-SERVICE	570.00
New Membership Development	140.00
Copies	60.00
P.O. Box	40.00
license Fees	40.00
Miscellaneous	<u>20.00</u>
Total	860.00

Executive Director Robin Cross then presented his report:

Moved additional equipment, including some older computers, to the WØSHQ radio shack at the Auditorium. The board consensus was to sell any unneeded items if possible, such as tube testers.

Posted ASCRA on the QRZ website.

ASCRA logo items (cups, caps, shirts, etc.) are now available on the Cafepress.com/ASCRA store. Any small profit will accrue to the General Fund to defray newsletter and operating expenses.

Ordered a replacement fan and RCA jack for the Alpha 374 amplifier at WØSHQ.

Purchased but not yet installed a low-voltage keying kit for the Collins 30L-1 amplifier at WØSHQ, and noted that a similar kit is available for the Heathkit SB-220 amplifier (<http://www.harbachelectronics.com>). These are required to allow the more modern transceivers to key older amplifiers which used high voltage AC keying circuits.

Attended Missouri Council for Repeater Coordination meeting in Columbia, MO. Dues are waived again this year. (Secretary noted that \$10 was sent to the Iowa Repeater Council for ASCRA by Bob Farnham.)

Forwarded proposed regional repeater band plan to directors, including suggested PL frequency usage where needed.

Modified FCC License for WØSHQ to reflect Robin Cross WØFEN as Trustee and posted it in the radio shack. Sent a signed copy to Bob Farnham for posting with the WØSHQ repeater located in Lamoni.

With assistance from Chuck Palmer, Doug Shaw, and Michael Hahn, installed and removed an 80/40M sloper antenna from the yagi tower because induced 20M RF from the yagi antenna triggered fire alarms located below the low end of the antenna wire. An alternate means of adding low band coverage at WØSHQ will be developed, probably using mobile antennas mounted on the tower. These frequencies are vital if WØSHQ is to viably support shorter haul emergency communications for the church, Missouri and nearby states, and the local community.

Doug Shaw then read a brief report from President Bob Farnham:

"As you know, I am unable to attend our ASCRA Board meeting on April 29, as I have a prior commitment with the Boy Scouts that weekend. I wanted to let you know that I have accepted a fellowship in the Bioinformatics and Computational Biology program at Iowa State University. I will be living in Ames, Iowa for the next two years beginning in August, 2006, after which I plan to return to Lamoni to continue my faculty appointment at Graceland University for the Department of Computer Science.

"As an organization, ASCRA has a bright future. We continue to progress in membership development and special projects, as well as preparedness to be In Service to our communities. The confluence of technology; particularly with respect to the Internet and radio arts will keep Amateur Radio in general, and ASCRA, viable for the foreseeable future. I have been honored to serve as your President for the past two years... I will continue to serve from my "remote base" in Ames to the best of my capability."

The board discussed several items of new business:

David Bland was invited to summarize his recent interactions with the director of Emergency planning for the city of Independence as operator of EARS (Emergency Assistance Radio Service) using KBØGR repeaters on 145.25, 145.31, and 145.37 MHz. FEMA or other grant money may become available to upgrade both EARS and ASCRA repeaters for RACES operations as part of the city's emergency communications plan. Dave will meet with the city again soon and coordinate with the ASCRA executive director regarding plans going forward. Robin Cross will represent ASCRA to the city and any other agencies that become involved as plans continue to develop.

Password access and management of the ASCRA website was deferred to offline discussion with Webmaster Bob Farnham.

Robin Cross raised the issue of the impacts on ASCRA 20 Meter Net operations during contests and by the possible assignment of AM transmission channels near our normal net frequency. He will continue to monitor the situation and address it as appropriate, including filing of impact statements with appropriate coordinating organizations or agencies.

The executive committee and other interested parties will undertake the development of an electronic meetings paradigm for ASCRA Board meetings to improve the methods for discussion and decision making by the board and the executive committee.

Robin Cross announced that Michael Hahn KGØXU will undertake to reactivate the Center Place Amateur Radio Association, chapter of ASCRA, in the coming months. Please contact Michael to assist him in any way with this effort.

The Secretary will draft a personal letter of appreciation to Milo Barnhard KC5AZ for his donation of the repeater equipment used by WØSHQ/R in Independence, which he has graciously loaned for an extended period.

Mike Oiler proposed that an output PL frequency for squelch control be added to the WØSHQ repeater in Independence to eliminate intermod triggering of 2 meter transceivers which occurs at multiple locations around the area. This was taken under advisement for probable future action.

Robin Cross reported that the Raytown Amateur Radio Association has relocated the KØGQ repeater on 145.17 MHz to a much higher water tower and now has one of the widest coverage areas of any repeater in the KC metro area. This small group also took 4th place nationally in last year's Field Day for their multi operator, emergency power class. This proves that even a small group can do well in this annual simulated emergency competition.

The chair then entertained a motion to adjourn after a benediction, which carried. A benediction was offered by Tom Thatcher for ASCRA and all its members and communities, and the board adjourned.

ASCRA Secretary
Doug Shaw, WAØEMX

You can find information about ASCRA on our web page at www.ascra.org, including previous issues of this IN-SERVICE newsletter.

IN-SERVICE

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Change Service Requested