



*From our Club President...*

## March Meeting To Be Relocated

By Robert Grinnell KD7WNV, President

The Renton Corps of the Salvation Army has informed us that they have been directed by their Divisional Commander to make the entire building available for the Division's use on March 15, so they are unable to accommodate our regular meeting. Although the Renton Corps offered us use of the building any other Saturday in March, the thinking of the Board is that, for multiple reasons, it is better to relocate the meeting than to change the date.

That reasoning begins with the consideration that since we all travel to the meeting, it is just generally less disruptive to alter that travel somewhat than to reschedule to a different day. Then there are the particular factors of this March, with Club or other ham radio schedule conflicts on most other Saturdays. The 8<sup>th</sup> is the Fleamarket, and the 1<sup>st</sup> would put the meeting before the Fleamarket, and unacceptably early in the month. The 22<sup>nd</sup> conflicts with the Comm Academy, and the 29<sup>th</sup> would be the morning right after the Awards Banquet. That would also put elections after the Banquet, so there would be no slate of new officers to be installed, and it conflicts with the MicroHAMS Digital Conference.

Finally, there are those very elections, to be held at the March meeting. With our Bylaws' requirement that a member must be present to be elected to a position, we do not want the potential of conflicts introduced by rescheduling to become a factor in who can be present, and thereby, in who can be elected.

We have identified a couple of alternate locations, but neither is fully satisfactory, so we are still seeking others. If you are aware of a suitable site, please contact Trustee Daniel Stevens, KL7WM. Please figure that we'll need the facility from about 9am to Noon. (The VE team has already decided not to conduct exams following the March meeting—since they will have just finished doing so the previous weekend at the Fleamarket—so we could get by without many tables.) The selected location will be announced in the March *Relay*, on the Reflector, and posted at the Fleamarket, so be watching.

### February Meeting and Nominations

Just to be clear, this month's meeting is unaffected by the foregoing, and will be held at the Salvation Army as usual. The program is the Fleamarket orientation. Regarding elections, we will begin taking nominations at this meeting. I want to reiterate my December admonition that we will need some new people to fill positions. Please give serious consideration to being one of them.

See you on the 15<sup>th</sup>!

## Renton Salvation Army – the New Look!



Photo by Ric Danielson K7RIC

### **M&K Fleamarket Volunteer Signups!**

***If you have not yet committed to helping with the Fleamarket, now is the time.***

*[See article—Page 3 of this Relay for information.]*

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The K7LED Relay, published monthly, is the official newsletter of the Mike & Key Amateur Radio Club. Mike & Key ARC is an ARRL-affiliated club dedicated to the growth and betterment of Amateur Radio.

The club meets at 10 A.M. the third Saturday of every month at Salvation Army Headquarters, 720 S. Tobin Street, in Renton (near the southeast corner of Renton Airport). Anyone interested in Amateur Radio is invited to participate in the Mike & Key ARC and its activities. Annual dues are \$12 for individuals and \$18 for families.



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146.82 output / 146.22 input  
(PL 103.5)  
Tiger Mountain  
224.120 output / 222.520 input  
(PL 103.5)  
Tiger Mountain

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info @ mikeandkey.org

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**Mike & Key Online – The following Club resources are available:**

**On the Web** – The Club's site at [www.mikeandkey.org](http://www.mikeandkey.org) includes extensive information about Club activities and events, such as: VE testing, membership, past editions of the *Relay* and more.

**Reflector** – The Club's public message board offers an easy and free way to converse with Club members. To sign up, visit: <http://groups.yahoo.com/groups/mkarc>.

**E-Relay** – Help the Club save on printing and postage, send Email to the *Relay* Editor: glbryan @ att.net .

**M&K Club - February Activities**

By George Thornton AE7G, Activity Manager

**FLEAMARKET OPERATIONS  
IS THE PROGRAM FOR FEBRUARY**

There is no program this month. February is devoted to the Fleamarket.

March will involve election of Club Officers.

The next program will not be until April. The program for April is not yet determined.

*See everyone at the Meeting!*

**February Door Prizes**

By Jim Aigner N7MU

Good things come in small packages. Many of this month's door prizes are small but useful. Among the prizes are a Plantronics Bluetooth Headset and a Hyper T4 Cooler Master CPU Cooler kit.

Here's the complete prize line-up for this month:

- **USB 2.0 Bluetooth Dongle** - use your Bluetooth devices with your old non-Bluetooth computer
- **SanDisk 16GB Ultra USB Flash Drive** - more storage for photos of the grandkids
- **Cardboard Parts Boxes** - lots of them
- **Plantronics Bluetooth Headset M155** - use with your cell phone or laptop: for Skyping
- **Hyper T4 Cooler Master CPU Cooler kit** - designed for several popular AMD and Intel processors
- **Package of 24 AA Alkaline Batteries**
- **Thunderbolt 5W Foldable Solar Panel Charger** - charge cell phones, handheld GPS, game consoles
- **24 Piece Button Battery Assortment** - for watches, LED devices, and other gadgets



**M&K Fleamarket Update for February**

By Michael Dinkelman N7WA

**As I write this, it is one month to our annual Fleamarket.** The first floor is sold out and there are about 30 tables left on the second floor. I can't see any reason not to expect a sellout as March 8<sup>th</sup> nears.

The biggest concern at this time is having enough workers to man the required positions. I am hopeful we can fill in a bit more at the next Club meeting. Those who have already signed up will find their badges available for pickup at the next Club meeting.

If you don't pick them up then or sign up late, they will be available down at the Fairgrounds. Of course, those with the coveted worker badges will be able to poke around during all setup hours (when not working) and look for early bargains.

**The program for the next Club meeting will be a discussion of the Fleamarket.** Yeah, I know you old timers have seen and heard it all before, but it's worth the time to stick around for the discussion and see if something new has popped up.

**This event provides most of the funding for the Club. It's really a responsibility of being a Club member to participate in helping to run this event—I think THAT should be on our Membership Application.**

**Please make an effort to make your signups. If you need me to send another invitation, send me an Email as soon as possible, to: [n7wa@arrl.net](mailto:n7wa@arrl.net).**

**These are the biggest holes needing to be filled:**

**Friday, All Shifts:**

Country Store, Security, Announcing

**Saturday, First Shift (5:30-7:30AM):**

Security, Announcing, Hospitality

**Saturday, Second Shift (7:30AM-9:00AM):**

Security

**Saturday, Third Shift (12:00AM-2:00PM):**

Ticket Takers

**Saturday, All shifts:**

Country Store

For some reason, the Country Store (our consignment store) is experiencing a lack of signups. Usually, the Country Store fills up rather quickly so I am not quite sure what is going on. If we can't man the Country Store, we may need to rethink about having this as a feature of our event.

We can deal with a lack of security except for Second Shift on Saturday. We need a bunch of people on the doors starting from 8-9AM.

**I also want to remind people that we need many people to stay around to help with Teardown starting at 3PM on Saturday.**

**M&K Radio Officer Report**

## February 2014

By Hal Goodell N7NW, Radio Officer

## K7LED Relay



Well, the weather at the East Tiger Mtn repeater site continues to be mild for winter. As you can see in the pictures we had a little ice then it went away and now we have maybe 1 or 2 inches of snow. Pretty mild this year for sure. Fortunately our repeaters continue to operate very well so no trips to the site have been needed. I am sure it's pretty cold up there.



As a some of you may know, one of the radio activities I enjoy is VHF weak signal operating on 6 and 2 meters, especially Earth Moon Earth (EME) moon bounce. Via this mode one can make a contact with any station who you have a common moon with, ie you both can see the moon at the same time. I have made many contacts with stations on all continents. I got to thinking that it might be fun to put the K7LED call sign on for EME and perhaps have some club members, who might be interested in seeing how EME works, come over an operate. We would be using the WSJT JT65B digital mode on 2 meters or the JT65A mode on 6 meters.

I can guarantee that it would be popular as that call sign has not been on the moon. (Well I did use it last weekend to work W1AW/5 in Texas, and immediately got requests to make other contacts) Many EME stations like to work new call signs, so it would be like a contest. Right now I am planning for some time in April, after the fleamarket and club elections. This might be a middle of the night operation as we would need to be on during some very good moon conditions and most likely a Friday evening or Saturday early morning time.

If you are interested, please drop me an email at [n7nw.hal@comcast.net](mailto:n7nw.hal@comcast.net). Will do more planning next month.



We met at Galliano's in SeaTac for our January meeting. Monica Cook, KF7QLX, Ric Danielson, K7RIC, Rita Danielson, KD7CNU and Gary Bryan, KG7KU, enjoyed a nice lunch while planning the Awards Banquet. Absent were Kathy Martin, KB7QMO, Dave Smith, KB7PSN and Ivy Nelson-Groves, WA7IVY.

We were able to finalize the Awards Banquet at a special meeting at the Martin's home on Saturday, Feb 1. All were present, except for Ivy. It was decided and confirmed **the banquet will be held on FRIDAY, March 28 at the Old Spaghetti Factory in Tukwila.** All information will be presented at the February general membership meeting on February 15<sup>th</sup>. We went with Friday evening due to venue availability. We will have a social hour 6—7 with dinner being served at 7.

**[See the Flyer on Page 5 of this Relay].**

You will have your choice of entrée and if you wish to order dessert, you will be able to do so. The cost for dinner will remain \$10.00 per person. The desserts are \$5.00 each. For the \$10.00 you will enjoy appetizers, salad, entrée, beverage (water, milk, iced tea, hot tea or coffee) and Spumoni ice cream for dessert. There is a full service bar right outside the door to the banquet hall if you'd like to purchase sodas or alcoholic drinks.

There will be a program remembering our silent keys, honoring our club officers and award winners. This is a special event for our club. We hope you will be able to attend.

Be prepared to get your tickets at the February 15<sup>th</sup> general membership meeting. We will also have menu choices for you. You will be able to buy tickets at our March 15<sup>th</sup> meeting as well.

The Membership Committee will have a table at the Flea Market. We will be located on the second floor near the Country Store. Come by and visit. If you have some vintage Mike & Key ARC materials you would be able to loan us, please bring it to the February meeting.

We are your committee, please feel free to give us any suggestions you have that would benefit the club. You may e-mail us at [mikeandkeymembers@gmail.com](mailto:mikeandkeymembers@gmail.com).

We are here to serve you. If you would like to join the committee, please attend our next planning meeting following the February general meeting at La Hacienda, 811 S 3rd in Renton. Respectfully, Rita KD7CNU.

## M&K-Membership Committee Report

By Rita Danielson KD7CNU

February 2014

K7LED Relay

**Mike & Key Annual Awards Banquet**  
Friday, March 28, 2014

On behalf of the Mike & Key Awards Membership Committee, you are invited to join us as we recognize those who have contributed to the Club in special ways – above and beyond.

When: **Friday, March 28<sup>th</sup>, 2014**

Where: Old Spaghetti Factory  
17100 Southcenter Pkwy, Suite #160  
Tukwila, WA 98188

Cost: **\$10.00/person** (which is a reduced price after the Club subsidy. The M&K Club will also provide appetizers).

Menu: Your choice of one of the following: Angel Hair Pomodoro, Meat Lover's Treat or Breast of Chicken Fettuccine. The meal comes with a crisp salad with ranch dressing, hot fresh baked bread, coffee, hot tea, iced tea or milk, and their signature spumoni ice cream dessert. The cost of any other beverage or food will be your responsibility.

**Door prizes** will be given out at this event.

Schedule for the evening:

- Happy hour starts at 6:00pm
- Banquet will start with dinner at 7:00pm
- Event ends at 9:00pm

**Seating is limited, so reserve your place as soon as possible.** Tickets will be sold at the general meetings in February and March. This event is by ticket only.

Looking forward to seeing you there!

---

**Email forwarded by Rita Danielson KD7CNU...**

**To: All Fort Flagler State Park Users February 6, 2014**  
**From: Mark Hurston**  
**Re: 2014 Work Party - Scheduled for March 1st**

Hello all,

*First, allow me to thank you all for your (and your groups) continued support of your park. This years work party is the weekend of March 1st. I hope that you and yours can come out. Here are some details as they currently stand. Read on, and please comment back as soon as possible.*

*Arrival: Please feel free to arrive on Friday the 28th, as early as 3 p.m. We'll then be able to start our party bright and early on Saturday. By starting early, we are hoping to also have an early pot luck dinner.*

*Accommodations: We all sincerely hope that you'll stay overnight on both Friday and Saturday so that you can enjoy the park and E.L.C./retreat center for a while. There are plenty of beds and numerous things to do while not working. But, you already knew that. Also, most all of you already know your "standard" accommodations, but please do follow up with me to let us know how many from your group are available to attend and we will find a place for you and your group to stay. Call me on 206-501-5011, or contact Ranger Aaron Terada on 360-385-3701.*

*Potluck Dinner: We will all certainly look forward to Saturday evening's dinner. Everyone plan on bringing something to share. These are always quite memorable! Let me know if you have any specific wishes or needs.*

*Thanks for reading. Please contact me asap with any questions, requests, etc. I'll look forward to hearing from all of you.*

*Best regards, MSH - Mark Hurston, President  
Fort Flagler Group Camp Association*

*Note: Some of you may have a variety of addresses for me. PLEASE use: [mshurston@gmail.com](mailto:mshurston@gmail.com), or, Phone : 206-501-5011.*

February 2014

## Celebrate Our February Members!

By Dave Smith KB7PSN, Treasurer

As of February 2014, the following have been Mike & Key members for the number of years stated. Congratulations to all of you, and thanks for your participation & service. Each of you makes us who we are:

Hal Goodell	N7NW	40 Years*
Wayne Moddison	K6DOW	29 Years*
Dean Holtan	N7XS	24 Years
Sandra Dunkel	K7OZY	23 Years
Richard Danielson	K7RIC	20 Years
Adrian Roth	KB7BVL	18 Years
Paul Roth	N7DOH	18 Years
Brendan Burget	KD7IKV	14 Years
Curtis Hanner	N7MWC	14 Years
Dawn Hanner	N7VWH	14 Years
Paul Donnor	KD7SSD	11 Years
Chuck Richardson	N7LMT	9 Years
David Brinkmann	N7UNN	6 Years
Roger Eck	KF7GDD	4 Years
Randy Stagers	K9VD	4 Years
John Swafford, II	W7MEU	4 Years
Jim Monson	K7JGM	1 Year
James Wraalstad	WQ7H	1 Year

\* Life Member, having been with club for 25 years or more.

Received on Email (portions with email reference have been deleted)...



Host of the ARRL NW  
Division &  
ARRL Centennial Regional  
Celebration

*SEA-PAC will soon be here on  
June 6-8, 2014.*

Information flyer: <https://tinyurl.com/SEA-PAC-mailer>.  
Go to [www.seapac.org](http://www.seapac.org) after February 15th to register online.

This year, SEA-PAC is hosting one of the six ARRL Regional celebrations of their Centennial Year. Get your lodging reservations soon as the available hotel/motel room are filling quickly. Mention SEA-PAC to our sponsor hotel/motels when you make your reservation for available discounts. The sponsors are listed on the SEA-PAC website at [www.seapac.org](http://www.seapac.org).

Remember to register for the SEA-PAC/Centennial starting February 15 and join us at Seaside, Oregon, June 6-8, 2014.

The SEA-PAC Committee

K7LED Relay

## Public Service: Seattle Seahawks Victory Mobile Parade

By Al Kush WV7R Communications Lead,  
Seafair Emergency Management Group



On behalf of The Seattle Seahawks, Seafair, the Seafair Emergency Management Group and the Seafair Parade Marshals, a BIG "Thank-you!" to all the ham radio operators who helped with the Seahawks Victory Parade.

Never has there been such a large event in our city. You braved the cold, the crowds and the confusion of helping run a "first time" event. You were all part of making history. We are proud and honored that you could take the time and make this even happen!



Photo's by Gary Bryan KG7KU.

Received on Email... from Bill Balzarini KL7BB...

## Presenting "Mesh-A-Palooza III"

Feb 22nd 2014 9AM-5PM

Third Floor of the Annex Building  
Suite 380 at One East Main Street  
Auburn, WA. 98002

This is the Third Mesh-a-palooza  
HS-MM Mesh get-together

To Join in on all of the HS-MM MESH networking Fun.

To Register and Sign-up, Please send:

- 1.- Your Name
- 2.- Your Call
- 3.- Your Phone#
- 4.- Your Email Address
- 5.- and the registration # 14525-MESH-P3

To: [Email.Hamshare@Yahoo.com](mailto:Email.Hamshare@Yahoo.com)

You will receive your reservation via return email.

The Annex Bldg main downstairs doors are open from  
~8:45am to 9:00am.

Lunch is from 12:30 noon to 1:30pm at local Auburn Cafes.

Bring your WRT54G & your Bullets for upgrades & Fun.

73 de Bill KL7BB - 206-400-1723

**IN SEARCH OF THE HOLY DIGITAL GRAIL FOR EMERGENCY COMMUNICATIONS**

By George Thornton AE7G

***I do volunteer emergency services work.*** This week I was activated to work at the Seattle Emergency Operations Center during the massive Seahawks parade and celebration. Experiences during that event show the challenges to our communication networks when stressed by high demand.

If you were downtown during the event you know that cellular and data services were overwhelmed by the sheer volume of cell phones and internet devices in the area, some of which were being used to stream live video of the event. The unusual environment poses challenges that must be met by professional communication systems as well.

Our experience taught us again that the HAM network is particularly robust; we were always up and running, and could be counted on to be a significant backup to professional and commercial systems.

Experience has demonstrated the practical limits of voice methods of communication. It takes a very long time to accurately transmit even a very simple written message. In an emergency needs can be overwhelming and voice nets have limited capacity. Voice nets can be easily overwhelmed by the demand.

Digital modes can offer clear advantages for some purposes over voice. Written messages can be transmitted quickly with 100% accuracy. Pictures, movies, maps, computer files and programs can easily be transmitted in digital form. Imagine if you had to transmit a computer file and the only way you could do it is read out the individual lines of code using your voice. How long would that take, and how many errors may occur.

There is no question the emergency communications world has been actively pursuing a reliable, reasonably priced and effective data communication system for use in amateur radio.

The purpose of this article is to survey the current state of the art and to attempt to predict where (and when) we might eventually arrive.

There are currently a number of attempts to come up with a digital solution. We can divide them between analog and digital modes.

**Analog (sound card)**

For some time software has been designed to transmit digital code through traditional analog voice radios using computer sound cards. The digital files are encoded in sound bursts using any of a number of formats, and the radio on the other end receives the sound and, using computer sound cards, decodes the sound into (hopefully) identical digital data on the receiving end.

CW is the original form of analog sound card digital transmission. The human brain operates as the decoding device, converting dits and dahs into letters and symbols. The sound card is the human ear.

In the digital world programs such as EASYPAL and the FLDIGI family enjoy enthusiastic support. They can operate without the need for equipment other than a computer, radio and microphone, but they work better with a Signalink, which costs around \$100. They are practical and effective for transmitting written messages, smaller computer files, pictures and low quality video. They are complex programs to set up and configure, and a lot of training and practice is involved to make them work effectively.

**Digital Radio**

There are a number of digital radio options in the amateur world. They include the professional standard, P25, as well as D Star and a new Yeasu variant.

The problem is that these systems require a substantial investment in new equipment. With no guarantee that any single standard will ultimately prevail, the risk is huge and the commitment has been reluctant.

D Star has been around the longest and has the greatest market penetration. Radios cost about a third to a half more than equivalent analog equipment. While some areas have comprehensive coverage, some smaller states lack even a single D Star repeater. My personal and highly subjective experience is that D Star does require some additional learning. When it works it works quite well, but there are a lot of instances where communication has failed for reasons that are sometimes mysterious.

I recently had the opportunity to do a field comparison of file data transfer using both D Star and FLDIGI. I found that while FLDIGI did work, the D Star system was three times faster. More importantly, the FLDIGI transfer process was blind, meaning the transmitting station would get no feedback from the receiving station until the transmission was complete. In some instances we transmitted for ten minutes, only to find the receiving station had not been ready. By contrast we knew immediately if the D Star communication was working.

D Star also currently has the most developed package of applications, built around the D Rats software solution. The D Rats solution provides file transfers, chat modes and an email system.

**[ Continued on Page 8 ]**

**IN SEARCH OF THE HOLY DIGITAL GRAIL FOR EMERGENCY COMMUNICATIONS... [Continued from Page 7]****P25**

P25 is extensively used in the professional community. The problem is that data solutions are proprietary and expensive. Nothing has been developed for the amateur community and even a simple data file transfer appears to be out of reach for P25 users. Unless and until development occurs, P25 will be limited to digital voice.

Yaesu has come up with a new radio that is similar to P25. Unfortunately this system is cross compatible with neither D Star nor P25. While the Yaesu system offers potentially significant improvement in speed, the reality is that unless and until this format gets significant market penetration, these radios have limited appeal.

**The UDR solution**

Another new development is in the works, coming from a local startup, NW Digital Radio. In a few months they will be offering the UDRX-440 solution.

The UDRX is an exclusively software defined radio with no knobs, buttons or screens. It requires a computer to operate and it is intended for data work.

What is unique about this radio is that it is both completely software defined and completely open source. It is also designed to work with all formats, so it will be compatible with all of the formats listed in this article.

Moreover, it is supposed to come with a set of software tools that already meet or exceed what is currently available in D Star radios.

What is particularly exciting about this radio is that it has captured the attention and enthusiasm of the amateur radio digital development community. If the radio holds to its promise we can expect huge advances. However, right now the radio is not even on the market.

**Where is it all going?**

Currently the market is in flux and the future is unpredictable.

D Star is currently the best solution. Icom, currently the only commercial manufacturer of D Star radios, has been making recent strides towards reducing price and improving the ease of use of these radios.

If the UDRX solution works well, the development world could move rapidly in that direction and there is a potential for rapid change. Interestingly the UDR radio is completely compatible with D Star so development could be in parallel.

The amateur community will settle on a single standard for development in the next couple of years and we can then hope for a rapid expansion in digital services for amateur radio use.

**IP Networks**

The other major development has been towards the development of forms of IP networks using amateur radio frequencies. Many amateurs are working hard to develop a robust network of what amounts to amateur based WiFi networks. Presumably users could log onto these networks using radios and tablets and perform all of the functions currently available for WiFi internet users.

The promise for this service is obviously huge and the effort to move that direction is robust. There has been an extensive deployment of HSMM-MESH networks in the Puget Sound community and work in that direction continues. The individual node equipment is actually pretty inexpensive, a typical station costs between \$100 and \$200.

The reality however is that a lot of work still needs to be done before these networks can become practical for emergency use. There is a lot that has to be done technically before a user can get on line and get set up for practical use. Until the technical issues get sorted out and distilled down to a basic set of instructions practical for amateur users, this will continue to be a valuable work in progress.

Another problem that needs to be solved is establishing priority of service.

With IP systems, the demand can skyrocket in a high demand or emergency environment. With everyone clamoring to get on line, the bandwidth can be quickly overwhelmed with the result that no one gets on. QOS, or Quality of Service, protocols are designed to give priority to essential traffic when there is high demand. The HAM IP system needs to have its own QOS protocols and they have to be tested and tested again to make sure they can keep working in extreme conditions.

Our HAM solutions are good because they can be counted on to work in the most difficult of conditions. When everyone else is down we are still standing. We need to have the same robust and independent reliability in our data systems if we want to maintain our relevance to emergency communication services.

The promise is there and the solutions are technical.

I predict that in the next few years there will be significant advances in the amateur digital world and major improvements in the ways amateurs can be relevant and useful in aid to our community.



**Mike & Key ARC – Elmer Contacts – By Jim Aigner N7MU**

Area	Elmer Coordinator	Email	Phone	Description
<b>Stations, Equipment</b>	John Robson, AC7LK	<a href="mailto:robson.j@comcast.net">robson.j@comcast.net</a>	253-984-6709	Station setup, eq't selection, antennas, digital
<b>Beams and Towers</b>	Alan Hughes, KB7SVU	<a href="mailto:kb7svu@juno.com">kb7svu@juno.com</a>	253-840-4947	Beam antennas and towers, safety
<b>Contesting</b>	Mike Dinkelman, N7WA	<a href="mailto:mwdink@clearwire.net">mwdink@clearwire.net</a>	253-631-3756	Contest operations
<b>CW</b>	Mike Dinkelman, N7WA	<a href="mailto:mwdink@clearwire.net">mwdink@clearwire.net</a>	253-631-3756	Learn CW, operating proficiency
<b>Digital Modes</b>	Curt Black, WR5J	<a href="mailto:wr5j@westseattlearc.org">wr5j@westseattlearc.org</a>	206-755-4541	Digital modes, software, TNC's
<b>D-STAR</b>	Curt Black, WR5J	<a href="mailto:wr5j@westseattlearc.org">wr5j@westseattlearc.org</a>	206-755-4541	D-STAR technology and operation
<b>Emergency Comm</b>	Tim Kane, K7ANE	<a href="mailto:k7ane@arrl.net">k7ane@arrl.net</a>	206-251-7467	CERT, ARES, organizations & Eq't
<b>HF Operation</b>	Dale Tongue AC7NP	<a href="mailto:dale.tongue@gmail.com">dale.tongue@gmail.com</a>	425-432-4254	Eq't, Antennas, best HF operating practices
<b>New Members</b>	Dick Radford, WA7NIW	<a href="mailto:wa7niw@arrl.net">wa7niw@arrl.net</a>	425-828-9791	Getting started, Eq't selection and operation
<b>QRP</b>	Frank Qualls, AB7HA	<a href="mailto:franklin_qualls@hotmail.com">franklin_qualls@hotmail.com</a>	425-802-1837	Low power operation, design & construction
<b>VHF / UHF Operation</b>	Hal Goodell, N7NW	<a href="mailto:n7nw.hal@comcast.net">n7nw.hal@comcast.net</a>	253-549-4178	6 meters and up; moon bounce, meteor scatter

**Too Much Info on VSWR**

by Sam Sullivan, N7RHE

As we know, when the source (transmitter impedance), the line (coax or balanced feedline), and load (antenna impedance) are not matched some energy is reflected back to the source. This reflection causes transmission line heating, loss of radiated power, and can cause damage to the finals in the transmitter. A calculation using the forward power and the reflected power is known as standing wave ratio (SWR). Since most detection methods use and display the voltages present, we most often use the term Voltage Standing Wave Ratio or VSWR.

Using the desired impedance values of the transmission line and the antenna,  $SWR = Z_o/Z_l$ , where  $Z_o$  is the characteristic impedance of the transmission line and  $Z_l$  is the impedance of the load. The equation can be inverted so the larger number is in the numerator. With RG-8 and a 100 ohm load,  $SWR = 100/50 = 2$ . I've skipped the definition of reflection coefficient,  $\Gamma$ , and it's relation to voltage and current ratios – perhaps that is a topic for later discussion.

The most common way to determine accurately the SWR is to measure forward and reflected powers with a wattmeter such as a Bird 43. Then SWR is the relation of forward and reflected power. If you have a nomograph you look at the intersection of the forward and reverse power lines. The math is  $SWR = (P_f^{1/2} + P_r^{1/2}) / (P_f^{1/2} - P_r^{1/2})$ . But even with a calculator square roots are messy. I've been able to use a calibrated directional coupler and vector voltmeter to measure the reverse power characteristics. This also gives the phase angle of the reflection to allow a mathematical or Smith chart analysis of the true impedance. Knowing the return loss in decibels, the messy math is  $SWR = (1 + 10^{dB/20}) / (1 - 10^{dB/20})$ . I plan on a future demonstration of this method at a meeting.

The most important thing to remember is that the built-in reading or external meter reading of VSWR might not be laboratory accurate but is a relative indication that you have reduced the reflected power at the measurement point by tuning out the reactive component of the load to achieve resonance.

**M&K Photos From Our January General Meeting**

*By Ric Danielson K7RIC*

**Meet Our Newest Members!**



**William Blum, W7WMB**



**Doug North, KG7GVW**



**Tom Petrakis, K4ULL**





## M&K General Meeting Minutes

By Ivy Nelson-Groves WA7IVY, Secretary

### General Meeting Agenda – 18 January 2014

Meeting was called to order at 10:03 AM by the President, Robert KD7WNV.

Pledge of Allegiance. Introduction of members and guests.

#### Announcements:

The Mike & Key ARC is affiliated with the ARRL, which members are encouraged to join. Everyone, including visitors, should sign the rosters. Visitors are reminded not to vote on membership matters.

#### Introductions

#### Officer Reports:

**President – Robert KD7WNV:** Nothing to report.

**Secretary – Ivy WA7IVY:** Nothing to report.

**Treasurer – Dave KB7PSN:** The books are in order. The audit has been completed for the 2013 general books and has passed.

**Activities Manager – George AE7G:** Today's activity will be a report on the Salmon Run 2013. Next month will be on the Flea Market.

**Chairman of the Board – Gil W7GIL:** Nothing to report.

**Radio Officer – Hal N7NW:** The repeater is working well. Hal put an article in the Relay about our site on Tiger Mountain. We do have a 220 MHz repeater – Hal encourages its use! Not much snow on the site, but it is only accessible by foot.

**Quorum present.** Gil W7GIL made a motion to approve the minutes as amended. Sam N7RHE seconded the motion. Motion passed.

**Vice President – Kathy KB7QMO:** Rita KD7CNU stood in for Kathy this month. Prospective members: Tom Petrakis K4ULL; Doug North KG7GVW; Bill Blum W7WMB. All were approved by the membership.

**Relay Editor – Gary KG7KU:** Gary thanked everyone for their contributions to the Relay and invited others to submit articles.

**Webmaster – Jim KD7BAT:** Website should be up to date. New bylaws have not been put on the website yet.

#### Standing Committee Reports:

**Membership – Monica KF7QLX:** Gary KG7KU thanked the membership committee for the Holiday party last month. Rita KD7CNU mentioned that we are looking for a different venue. The Old Spaghetti factory changed management and are charging a whole lot more now which necessitates the change. The date is March 29th, starting at around 7pm (tentatively). Gary also encouraged anyone who is interested to join the committee.

**Facilities – Daniel KL7WM:** The inventory is in progress. Jim KD7BAT mentioned that the final configuration of the building isn't completed. They've had some setbacks with the Salvation Army's renovation.

**Education – Jim K7JGM:** Robert KD7WNV mentioned an Extra class that is in the planning stages in the Everett area and a few Technician classes that will be coming up. Daniel KL7WM mentioned several classes at the Red Cross. Comm Academy and

the MicroHams Conferences are coming up. Daniel thanked Jim KD7BAT for posting the classes on our website.

**Public Service – Gary KF7TBC / Robert KD7WNV:** Currently working on getting the booklet wrapped up. If you see something that needs updating, drop a note to Robert (new nets, new repeaters, etc. The Chilly Hilly will be coming up soon near the end of February.

**Technical and Special Interest: Gil W7GIL:** no report.

#### Other Committees (as appropriate):

**VE Exams – Scott AG7T:** There were 7 people attend testing last month. Awarded 3 Technician, 1 General and 2 Extra. For 2013: 167 people came to our testing sessions, giving 192 exam elements: 74 Technicians, 51 General and 24 Extras. Exams will be held today at 12:30 pm at the Salvation Army Building.

**Logo – Jim N7MU:** If you want the club logo on apparel, please see him. If you want one of the Ham Radio Hats from Hot Press, contact Mike N7WA. If you want a club badge, today see Dave.

**Flea Market – Mike N7WA and Hal N7NW:** 7-8 March 2014. 48 days. We have a lot of positions to fill for Flea Market and need help on both Friday and Saturday. Need a ticket co-chair. The Gold Gate has changed a little bit this year. Badge pickup will be next month and your schedule will be on the back of the badges, which will be available at next month's meeting. This is the club's only fundraising activity and allows us to keep our dues low. Next month's program will be on the Flea Market.

**Field Day – Ivy WA7IVY:** 27-29 June 2014. 140 days. We won't have a bunch of activity until after Flea Market. Mike N7WA relayed a story about our CW performance at Field Day as compared to N7PP's performance.

**Picnic: Hal N7NW:** Dave KD7PSN made reservation has been made for the 3rd Saturday in August at Gene Coulon Park.

**Awards committee: Gary KG7KU, Dick WA7NIW, Jim KD7BAT:** No report.

**Audit committee: Sam N7RHE:** The audit was completed by the audit committee today before the general meeting, and the books were found in order.

**Old Business:** No new business.

#### New Business:

**Elections are in March.** Most the officers are term limited this year, and we will be taking nominations for offices and trustee positions starting next month.

**Alligator Award – Dean N7XS** still holds the award.

#### Good of the Order:

Red Cross net will be changing frequency to 441.550 MHz +103.5 still on Tuesdays at 8 p.m. Nothing else has changed. Anyone is welcome to join this net.

#### GO HAWKS!!

The **next Mike & Key Board meeting** will be on the first Wednesday of the month, February 5th at 7:30 pm, at the Salvation Army in Renton.

The **next Mike & Key General Membership meeting** is the third Saturday of the month, February 15th at 10:00 am at the Salvation Army in Renton.

Michelle WA7PVE made a motion to close the meeting; Monica KF7QLX seconded. The motion was passed. Meeting adjourned at 10:57 hours.

9 guests; 52 members, 51 ARRL members

**Attested: Ivy Nelson-Groves WA7IVY, Secretary**



**M&K Board Meeting Minutes**

*By Ivy Nelson-Groves WA7IVY, Secretary  
Held 5-February 2014*

**Officers present**

X	<b>President</b>	<b>Robert Grinnell</b>	<b>KD7WNV</b>
X	<b>Vice President</b>	<b>Kathy Martin</b>	<b>KB7QMO</b>
X	<b>Secretary</b>	<b>Ivy Nelson-Groves</b>	<b>WA7IVY</b>
X	<b>Treasurer</b>	<b>Dave Smith</b>	<b>KB7PSN</b>
	<b>Activities Manager</b>	<b>George Thornton</b>	<b>AE7G</b>
	<b>Radio Officer</b>	<b>Hal Goodell</b>	<b>N7NW</b>

**Trustees present**

X	<b>No. 1</b>	<b>Jim Monson</b>	<b>K7JGM</b>
X	<b>No. 2</b>	<b>Monica Cook</b>	<b>KF7QLX</b>
X	<b>No. 3</b>	<b>Gary Anderson</b>	<b>KF7TBC</b>
X	<b>No. 4</b>	<b>Gil Drynan</b>	<b>W7GIL</b>
X	<b>No. 5</b>	<b>Daniel Stevens</b>	<b>KL7WM</b>

**Other officers (non-voting)**

X	<b>Relay Editor</b>	<b>Gary Bryan</b>	<b>KG7KU</b>
	<b>Webmaster</b>	<b>Jim Etwiler</b>	<b>KD7BAT</b>

**Visitors**

**Michael Hanson** **KG7MX**

The Chairman of the Board called the meeting to order at 7:36 p.m.

**Minutes:** A motion was made to approve the minutes as published was made by Dave KB7PSN and seconded by Monica KF7QLX. Motion passed.

**OFFICER REPORTS:**

**Chairman of the Board – Gil W7GIL:** no report.

**President – Robert KD7WNV:** no report.

**Vice President – Kathy KB7QMO:** New applications: Eric Skone K7ELK, Dan Aalberg KG7DAB. They were approved by the board.

**Secretary – Ivy WA7IVY:** no report.

**Treasurer – Dave KB7PSN:** The Club's books are in order. The new license plates and tabs are in for the trailers.

**Activity Manager – George AE7G:** not present. Gil W7GIL mentioned that he recently received a donation of some equipment that can be used for our monthly drawing.

**Radio Officer – HAL N7NW:** not present.

**Relay Editor – Gary KG7KU:** Gary thanked everyone who contributed to the newsletter and solicited articles for this upcoming month. Gary wanted to mention how to encourage people to email of the Relay rather than mailed copies. This was discussed and no action will be taken for the time being.

**Webmaster – Jim KD7BAT:** not present.

**STANDING COMMITTEES:**

**Membership – Monica KF7QLX:** The banquet will be at the same location but on a Friday night rather than Saturday so that we may have the facility for a longer period of time for a reduced price. There will be flyers going out at the next meeting with details. March 28<sup>th</sup> is the date.

**Facilities – Daniel KL7WM:** Daniel has reserved a room as a backup for March 15<sup>th</sup>, but we are still looking for something a bit larger and will allow us more time. The Auburn option has a smaller room, but we can have it for longer. We can check a few other options. We'd like to have a place by the next meeting. We will have an announcement in the relay that we will have a change of location in March.

**Education & Training – Jim K7JGM:** EZ NEC computer modeling program – possibility of a class or a program. Comm Academy is coming up.

**Public Service – Gary KF7TBC:** Robert KD7WNV mentioned that the Chilly Hilly is coming up at the end of the month. Booklet preparations are coming along. We did lose a few advertisers but we should still be within budget. Robert may need some help with the layout.

**Technical – Gil W7GIL:** No report.

**Field Day – Ivy WA7IVY:** No report.

**Flea Market – HAL N7NW:** Second payment is due in the next few weeks.

**OLD BUSINESS:**

Policies and Procedures document was discussed. Monica KF7QLX will send proposed changes to George AE7G.

**NEW BUSINESS:** No new business.

**GOOD OF THE ORDER:** No items for the good of the order.

Next Board meeting will be on March 5, 2014 at 7:30 pm at the Salvation Army Building in Renton.

There being no further business, the Chairman of the Board adjourned the meeting at 8:54 pm.

**Attested: Ivy Nelson-Groves WA7IVY, Secretary**



## What's In the Club Library?

By Tim Kane, K7ANE and Toku Okumura, AD7JA

We've been really glad to see that many of you have been taking advantage of the Mike and Key library. But we'd like to encourage the rest of our members to take the time to browse the many great amateur radio oriented offerings on the shelves at the library, or on the table at the general meetings. One of the benefits of M&K membership is that you can check any of them out for a month at a time, so you can peruse them at your leisure.

Some of the many titles we have include:

- *Radio Amateur Handbook, 1938: 1940-45, 1950/55, 1966-76, 1983/85, 1990-92/95, 2000, 2005-13*
- *Radio Amateur Callbook: US 1939, 1947, 1960/66, 1995, and International 1995*
- *"For Dummies" series: Ham Radio, Two-way Radio and Scanners, Circuit-building*
- *License Manuals: Tech, General (6<sup>th</sup> ed.), Extra (9<sup>th</sup> ed.)*

We'd like to know if there are any publications you'd like us to have in the club library. Based on member requests, some of our many recently acquired books include:

- *ARRL Antenna Book (21<sup>st</sup> edition)*
- *Basic Antennas: Understanding Practical Antennas...*
- *Vertical Antenna Classics*
- *Stealth Antennas*
- *Antenna Zoning*
- *ARRL's Small Antennas for Small Spaces*
- *ARRL Guide to Antenna Tuners*
- *ARRL Field Day Handbook*
- *ARRL Satellite Handbook*
- *ARRL Emergency Communications Handbook*
- *Emergency Power for Radio Communications*
- *Personal Emergency Communications – Staying in Touch*
- *Disaster Preparedness Handbook: a Guide for Families*
- *ARRL HF Digital Handbook, VHF Digital Handbook*
- *Amateur Radio on the Move – from your Car, Boat, Airplane*
- *ARRL's ABCs of SDR (Software Defined Radio)*
- *ARRL's Low Power Communications (QRP)*
- *ARRL DXCC Handbook*
- *And many more...*

The library is maintained and serviced by M&K librarian Toku Okumura, AD7JA, at his television service company, Skyway TV, at 11818 Renton Ave. S, Seattle 98178. Tel: 206-772-2450. For more information, opening times and a map, go to his website: <http://www.skywaytv.net/> Please come by and browse!

## Pacific Northwest Hamfairs & Events

Source: PNW Hamfair webpage at <http://www.n7cfo.com/amradio/hf/hf.htm>. (Used with Permission)

Link: [The Pacific Northwest Hamfair and Events Calendar](#)

Also: [Western Washington Amateur Radio Licensing Classes, Training Classes and Examination Sessions](#)

**February 23, 2014. Burnaby Amateur Radio Club Swapmeet.** New Westminster, BC. <http://ve7bar.org/swap-meet/>

**March 8, 2014. Mike & Key Swap Meet.** Puyallup fairgrounds exhibition hall, Puyallup, WA. *This is an ARRL sanctioned event.* For information, contact [dmdink@clearwire.net](mailto:dmdink@clearwire.net) or [n7wa@arrl.net](mailto:n7wa@arrl.net) . <http://www.mikeandkey.org/flea.htm> [Flyer in PDF](#). (194K)

**March 16, 2014. CVRS Antique Radio Swapmeet.** Burnaby, BC. [http://rac.eton.ca/events/detail.php?event\\_ID=1645](http://rac.eton.ca/events/detail.php?event_ID=1645)

**March 22-23, 2014. Communications Academy.** Seattle, WA. *This is an ARRL sanctioned event.* <http://www.commacademy.org>

**March 29, 2014. MicroHAMS Digital Conference.** Redmond, WA. *This is an ARRL sanctioned event.* Registration is open! <http://www.microhams.com> . [Flyer in PDF](#).

**April 12, 2014 Yakima Hamfest.** Yakima, Washington. Selah Civic Center, 216 South 1st Street, Selah, WA. For information, contact Lindsay Kooser (509)965-6612 [n7rhw@arrl.net](mailto:n7rhw@arrl.net) . <http://yakimaamateurclub.com/yakima-hamfest/>

February 2014

K7LED Relay

# Ham Nets & Events – 2014 – February / March [ Fleamarket ] / April

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>09</b> 1900 – NWWA-LDS Net 147.34 (Weekly) 2000 – King Co. ARES Net 147.08 (Weekly) 2200 – NW Astronomy Net 145.33 (Weekly)	<b>10</b> 0545 & 1645 – Weather Net 145.33 (M-F) 1830 – WA Emerg. HF Net-ARES 3.985 (Weekly) 1900 – Seattle ACS Net 146.90 (Weekly) 1930 – PSRG Net 146.96(Wkly)	<b>11</b> 2000– American Red Cross /SeattleTeam Net 441.550 (+103.5) (Weekly) 2000 – Snohomish Co. ACS/RACES Net 146.92 (Weekly)	<b>12</b>	<b>13</b> 1900 – M&K Public Service Net 146.82 (Weekly)	<b>14</b>	<b>15</b> 1000–M&K Club Meeting 1100– Club Holiday Party 1230– M&K Ham Radio Exams At Salvation Army, Renton. Contact: Scott— <a href="mailto:aq7t@arrl.net">aq7t@arrl.net</a> 0900 – WA State Emerg. Net (WSEN) ARES HF Net 3.985 (Weekly)
<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>
<b>23</b> <b>Public Service:</b> Chilly Hilly Bike Ride, Bainbridge Island. Contact: Craig AC7BV <a href="mailto:CraigH@Blarg.net">CraigH@Blarg.net</a>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>01</b> – MARCH –
<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b> M&K Board Mtg Salvation Army Bldg Renton, 7:30 pm	<b>06</b>	<b>07 M&amp;K Fleamarket [Setup]</b> Relay Articles Due	<b>08 M&amp;K Fleamarket</b> Puyallup Fairgrounds [ 9am – 3pm ]
<b>09</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b> 1000–M&K Club Mtg, [Location TBD- this month only] M&K Ham Radio Exams, Contact: Scott— <a href="mailto:aq7t@arrl.net">aq7t@arrl.net</a>
<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>
<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28 M&amp;K Awards Banquet</b> Old Spaghetti Factory – Tukwila 6pm-9pm	<b>29</b>
<b>30</b>	<b>31</b>	<b>01</b> – APRIL –	<b>02</b> M&K Board Mtg Salvation Army Bldg Renton, 7:30 pm	<b>03</b>	<b>04</b>	<b>05</b>