



# YAVAPAI SIGNAL



The Yavapai Amateur Radio Club • Prescott, Arizona • DM-34 • Volume 28- No. 10 • October 2013



## A Message from the President...

Last month I chastised members for not coming forward to fill vacancies on the Board of Directors and several available committee positions. It was pointed out to me that some of you may not be aware of available positions for which you may be well qualified. Here is a list of committee vacancies that I would like to fill as soon as possible. If you are interested in any of these positions or if you would like to just help out, please give me a call or an email. Most positions could benefit from additional help.

Open Committee Positions:

**Club Picnic:** (2 positions) - arrange for a venue and obtain necessary food and supplies.

**Field Day (chairman)** – arrange for field day site and help with promotion of event

**YARC Holiday Party (chairman)** – schedule a date and venue for party, with board input

**Refreshments (assistant)** – help Dave, K6UWV supply refreshments for meetings and events

**Club Shirts** (Pete would like to be replaced) – take orders for shirts and pick up from Printer

I would like to thank Jack W7JLC for the September program. I, for one, had no idea of the size of those balloons and their payloads. Amazing! Nearly as much as the presentation on the NASA balloon launch, I enjoyed the short video on the high school launch. Great video!

We have been acquiring several pieces for our auction in November, so that is developing into a fun evening's entertainment. Don't forget we have elections of officers and directors at the November meeting as well.

The September meeting was so well attended that a few members wondered if there might be a need for a larger venue for club meetings. I think we are a bit premature on this issue. Meetings have been pretty well attended throughout the summer months and September was great, but before we worry, we could spend a few moments before and after each meeting to move tables and chairs around for the best use of the space we have. Let's not ask Terry to make the room ready for us after teaching all day, or to clean up after us.

Don, WB7TPH

## October Program

The October program will be about Fox (transmitter) Hunts. There is much more to the subject than we have tried out so far, and our guest speaker is an authority on the subject.



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## *Welcome to the Yavapai Amateur Radio Club*

The Yavapai Amateur Radio Club (YARC) is an ARRL affiliated Special Service Club. The club participates in many activities in the tri-city area by providing communications for local events, emergency communications, and promotion of the hobby throughout the community.

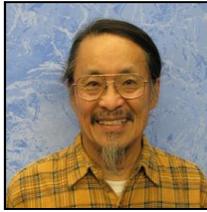
Membership in the YARC is open to any interested amateur or non-amateur alike. Dues are \$20.00/year (Full-time students \$15). The YARC meets at 7:00 p.m. local time on the first Thursday of every month in the Technology Room 404, at the Granite Mountain Middle School, 1800 Williamson Valley Road in Prescott. It is about ½ mile north of Iron Springs road, and all amateurs and non-amateurs as well are invited. Programs of interest are included as part of the meeting.

The weekly Net is held every Wednesday at 7:00 p.m. local time on 146.880- repeater. All amateurs are invited to participate, and visitors are always welcome.

The Yavapai County ARES/RACES Net is held on Monday nights approximately at 7:00 p.m. local time on the 145.290- repeater on Mingus Mountain. A PL of 127.3 is required.

### *Club Repeater*

The YARC 146.880- repeater is located on the hill above Willow Creek road and requires a PL of 100.0 Hz. Our deepest gratitude to Bill Kafka, W2YAV, (SK) for allowing us to acquire the original club repeater. ■



## *Minutes of August 27, 2013 Board Meeting at Coco's Restaurant, Prescott, Arizona*

Present: WB7TPH, KV8TD, W7BJ, AE7CG, WB7RRQ, AD7YR, KD5VRW, W7HAM

The meeting was called to order by WB7TPH at 1849 MST.

### Agenda:

#### Old Business:

1. Recent Expense: W7BJ reported that there was a recent expense of \$76.00 for the annual rent of the post office box from the United States Postal Service. WB7RRQ made a motion that the expense be approved. W7HAM seconded the motion. The motion was unanimously approved by acclamation.
2. Vice President's Book: WB7TPH reported that WB6ODR would try to retrieve the vice president's book from the estate of KE7NAP (SK).
3. Policies and Procedures Manual: WB7TPH is starting to put together a policies and procedures manual for the club's officers and board members. WB7TPH is going through the club's board and general meeting minutes for calendar year 2013 to date.
4. Projector: WB7TPH reported that Granite Mountain Middle School has a projector, and that the Jeep Posse also has one. YARC can use both projectors on the respective premises. WB7TPH stated that the club should have its own projector, and that it need not be an expensive one. The board of directors had previously approved of purchasing one. W7BJ said that a new unit could cost between \$700-\$800. Board members agreed that any club projector should have remote control and high resolution as features. W7BJ agreed to do further research regarding specific brands, prices, and features. Board members also agreed that it would be desirable for the club to have its own projection screen to accompany its own projector.
5. Donation of Station: WB7TPH reported receiving an e-mail message from KB7TRE, which was also addressed to N7CW. An entire amateur radio station has been donated to Granite Mountain Middle School. N7CW and N6KZ will be dismantling the antenna next week. The equipment has been donated to the school, but YARC may use it.
6. Club Donation to Yavapai Food Bank: WB7TPH presented a donation receipt to W7BJ. The receipt acknowledged a YARC contribution of \$5.00 in cash and 9 pounds of assorted canned foods to the Yavapai Food Bank. The receipt was dated August 17, 2013.
7. Proposed Special Event Radio Operating Activity: WB7TPH circulated a list of proposals for a special event amateur radio operating activity on June 30, 2014 in commemoration of the heroism of the Granite Mountain Hotshots firefighting team. The proposals mentioned fre-

quency bands of operation; physical locations; time duration; and call sign.

### New Business:

1. Officers and Directors Terms to Expire: WB7TPH mentioned that there was as yet no nominating committee formed. He circulated a draft of a document entitled, "Yavapai Amateur Radio Club — Membership Responsibility," wherein he explained that club duties and responsibilities are not solely placed on elected officers and board members, but must also be shared to a considerable extent by the general membership. The current terms of the vice president (KV8TD) and secretary (AE7CG) will expire on December 31, 2013 and according to the club by-laws must be filled by election prior to that date. Three board of directors members are elected yearly, and the current elected board members (WB7RRQ, KD5VRW, and W7HAM) have all agreed to serve again in calendar year 2014.
2. Club QSL Card: KV8TD broached the subject of a club QSL card. Could the club produce a common-design QSL card with the omission of a member's name, address, and call sign? Such a card could be printed in considerable quantity and sold to individual members for personalization as to name, address, and call sign. Such a card would give YARC greater visibility in the amateur radio community.
3. Adjournment: WB7TPH adjourned the meeting at 1945 MST.

Respectfully submitted by

Loren Singh, AE7CG

YARC Secretary

### **Minutes of Sept. 5, 2013 General Meeting at Granite Mountain Middle School, Prescott, Arizona**

The meeting was called to order by WB7TPH at 1900 MST, and the Pledge of Allegiance to the Flag was recited by all present. Officers and board members did self-introductions and visitors were welcomed.

WB7TPH asked for a motion to approve the minutes of

the August 1, 2013 general meeting as published in the Yavapai Signal. WB6ODR made the motion. WB7RRQ seconded the motion. The motion was unanimously approved by acclamation.

WB7TPH asked for a motion to approve the treasurer's report for August 2013 as published in the Yavapai Signal. WB6ODR made the motion. W7HAM seconded the motion. The motion was unanimously approved by acclamation.

New membership applications were submitted by Timothy Urell, KF7FOX; Patrick Eastman, KG7EWD; Gary Lisciarelli, KG7EWE; Rex Mauldin, N7NGM; and Thomas Aslin, W7SUA. All of the applications were unanimously approved by acclamation.

### Committee Reports:

1. Event Communications: WA6ZZJ reported that September will be a very busy month for event communications: a) 9/7 March of Dimes event; b) 9/15 Skull Valley Loop Challenge; c) 9/21 Tour de P.V.; and d) 9/28 Groom Creek Classic.
2. Newsletter: AC6AA said that all is well with the Yavapai Signal.
3. Badges and Patches: W7BJ announced that club badges are available with magnets, pins, or clips at \$7.00 each, and club patches are available for \$3.00 each.
4. Shirts: K6VVR mentioned the availability of club shirts and their cost.
5. Repeater: K6VVR said that he will be installing an uninterruptible power supply (UPS) at the club repeater site.
6. Fox Hunt: K6VVR announced that the next fox hunt will be on September 8, 2013 at 1300 MST. The event will begin at the parking lot of the Arizona State Credit Union located near the intersection of Gail Gardner Way and Willow Creek Road in Prescott. He said that the activity usually is over by 1500 MST.
7. Elmers: N7CW said that all is well with club mentoring activities.

8. K7GMG: KB7TRE reported that the Granite Mountain Middle School radio club has resumed its activities, and that there are slightly less than 20 students who are participating in the club.
9. VEC Testing: WB9VGJ announced that the next club-sponsored VEC test session will be on November 2, 2013 at the Jeep Posse Building in Prescott. W7JLC mentioned that prior to that date, YARC is supplying 4 instructors to teach an all-day Technician Class license examination preparation class at Embry-Riddle Aeronautical University (ERAU) on October 26, 2013.
10. Ham of the Month Award: WB7TPH presented the Ham of the Month award to KF7RXR for his selfless volunteer work in helping to train guide and service dogs for the disabled. He is currently training Jetta, a spirited and energetic golden Labrador.

#### **Old Business:**

1. Dutch Auction: The club will conduct a Dutch auction of donated amateur radio equipment at its November 7, 2013 general meeting. Club members with gear to donate should contact WB7TPH regarding storage of donations until the time of the auction.
  2. Williams Hamfest: WB7TPH said that YARC will have a booth at the Williams Hamfest during the summer of 2014.
  3. Special Event Station: WB7TPH reported that the board of directors has approved of operating a special event station on June 30, 2014 from Yarnell in commemoration of the heroism of the Granite Mountain Hotshots firefighting team. Initial plans are proceeding, and a call sign must still be decided.
  4. Nominating Committee: AD7YR stated that a Nominating Committee had to be formed, and that the club by-laws required an election of officers and board members at the November 7, 2013 general meeting. The board appointed KV8TD as interim vice president after the passing of KE7NAP (SK) left the position vacant. KV8TD has indicated that he is willing to continue serving as vice president, and will stand for election as a candidate for the position. AE7CG will be serving as secretary through December 31, 2013; his successor must be elected at the November meeting. WB7RRQ, W7HAM, and KD5VRW are willing to continue serving as board members and will stand for re-election as candidates for their respective positions. Other candidates are also encouraged to seek nominations.
5. Additional New Family Member Application: An additional new family membership application was received during the course of the meeting from Ron (K7RJ) and Elaine (N7BDZ) Jones. WB7TPH asked for a motion that the application be approved. KB7TRE made the motion. KD7VVBG seconded the motion. The motion was unanimously approved by acclamation.

#### **New Business:**

1. Yarnell Cleanup Activity: N7RIS announced that the Yavapai County EOC is forming a group to go to Yarnell to do property cleanups. Interested volunteers should contact the EOC for additional information.
2. NRA Operating Event at Gunsite Academy: WB9VGJ announced that YARC will be operating special event station K7NRA from the Gunsite Academy in Paulden on Sunday, November 17, 2013. The activity will be in commemoration of the founding of the National Rifle Association. Further information will appear in the October 2013 issue of the Yavapai Signal.
3. Donated Station: KB7TRE explained that a complete station has been donated to Granite Mountain Middle School for educational purposes. It will be installed in the technology laboratory at the school and available for YARC members to use when KB7TRE is present. The equipment is not to be lent for use off the school premises.
4. Club QSL Card: KV8TD has been investigating possible designs or a club QSL card. The club must decide on a design and find a sponsor. The final design will allow for personalization of name, address, call sign, and other member information.
5. Change of Meeting Night: N6KZ proposed that the board of directors consider alternating the dates of YARC general meetings from the 1<sup>st</sup> to the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> Thursday evenings of the month. He mentioned that some members have scheduling conflicts, and that alternating the dates would afford all members opportunities for at least attending some of the general meetings. KD5VRW said that the board is willing to consider the proposal. Past president (2004) N7NGM mentioned that the question was faced before. KB7TRE said that any change could conflict with school activities, and that the technology laboratory might not be available at other times. N6MY was happy with the attendance on September 5, and asked rhetorically if the club should tam-

per with such success. A member of the audience asserted that holding YARC general meetings on the 2<sup>nd</sup> and 3<sup>rd</sup> Thursdays would conflict with Yavapai County Search and Rescue meetings. WB7TPH said that the board would discuss the proposed change at its next meeting.

6. ARES/RACES Vehicles Not in Parades: KI6AHH asked why the ARES/RACES van was not in Prescott parades. KD7VVG said that the van belonged to the county and not to the club, and that Prescott parade organizers had made it difficult for ARES/RACES to participate in Prescott parades.
7. Adjournment: WB7TPH adjourned the general meeting at 1952 MST.
8. 50-50 Drawing: The winning ticket was number 531469. The lucky winner of \$51.00 was KB8NRI.
9. WA8ULG Hospitalized: W7BNW reported that he had received a telephone call informing him that WA8ULG had been hospitalized in Flagstaff. W7BNW said that he would provide details as they became available to him to concerned friends.
10. Program: Jack Crabtree, W7JLC spoke about Embry-Riddle Aeronautical University's participation in NASA's scientific balloon flights, and the role of amateur radio operating at 438.5 MHz in the balloon payloads. He showed slides of the Columbia Scientific Balloon Station in Palestine, TX and of the launch facility at Fort Sumner, NM. W7JLC stated that NASA launches have also been from Antarctica, Australia, and New Zealand. He also showed slides of a recent balloon recovery near Wickenburg.

Respectfully submitted by  
Loren Singh, AE7CG  
YARC Secretary

**Don't forget the YARC Net!**

The YARC Net meets each Wednesday Evening at 7:00 p.m. on the 146.880 Repeater. Thanks to Dale, AD7NQ for acting as net control.



If you would like to be net control for one or more evenings, contact Dale at: [net.manager@w7yrc.org](mailto:net.manager@w7yrc.org).

## Need a Hand?

If you need assistance, we want to help you. If you are just starting out in ham radio, or simply have run across something that you could use a hand with... technical assistance or answers to questions about the Yavapai Amateur Radio Club, are available from knowledgeable club members.



**Don't Hesitate to Ask for Help!!**

**CALL:**  
**Bud Semon, N7CW at: (928) 771- 8267**  
**or**  
**Jim Zimmerman, N6KZ at (928) 713- 0542**

### YARC Officers for 2013

<b>President</b> Don Bauer, WB7TPH <i>president@w7yrc.org</i>	<b>Vice President</b> Doug Freeman, KV8TD <i>vice.president@w7yrc.org</i>
<b>Secretary</b> Loren Singh, AE7CG <i>secretary@w7yrc.org</i>	<b>Treasurer</b> David Hanson, W7BJ <i>treasurer@w7yrc.org</i>

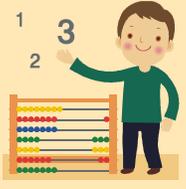
**Board of Directors (includes Club Officers)**

Creighton Grotbeck -- AD7YR  
Ralph Gendron -- W7HAM  
Bob Rosevear -- WB7RRQ  
Roger Nash -- KD5VRW

**Newsletter Editor:** Joe Oliver, AC6AA  
*newsletter@w7yrc.org*

### Membership Count:

1st Thurs. in August.....	186
Gain/Loss.....	+4
1st Thurs. in Sept.....	190





Yavapai Amateur Radio Club  
 PO Box 11994  
 Prescott, AZ 86304-1994

**TREASURER'S REPORT**  
**August 2013**

**General Fund**      **Repeater Fund**

**BEGINNING CASH BALANCE - July 31, 2013**

**7,804.07**      **1,919.37**

Dues - Mike Temple	AD5SU	new	18.00	2.00
Dues - Betty Temple	KF5LDA	new	0.00	0.00
Dues - Tony Lowry	KA7JKX		18.00	2.00
Dues - Ryan Lowry	KF7CYF		0.00	0.00
Dues - William Taylor	AD7WW		18.00	2.00
Dues - Jim Ellzey	KE7JEQ		18.00	2.00
Dues - Brent Ellzey	KE7JGM		0.00	0.00
Dues - Patti Halgunseth	KD7VBG		18.00	2.00
Dues - Paul Schumacher	AD7SL		18.00	2.00
Dues - Richard Von Aschen	N7RIS		18.00	2.00
Dues - Tony Jackson	KI6AHH		18.00	2.00
Dues - Marty Jackson	KF6BTU		0.00	0.00
Dues - Daniel Simpson	AE7IH		18.00	2.00
Dues - Erica Simpson	KF7MAU		0.00	0.00
Dues - Robert Tilman	K7CJW		18.00	2.00
Dues - David Aichelman	N7NZH		36.00	4.00
Dues - Jack Crabtree	W7JLC		18.00	2.00
Dues - Susan Crabtree	N0GUT		0.00	0.00
50/50 Raffle			67.00	
50/50 Raffle – David Drown			(33.50)	
Canadian coin not accepted by Wells Fargo			(0.25)	
Interest Income				0.08

**TOTAL INCOME**

**267.25**      **26.08**      **293.33**

Pete Morrison - Ken Nelson Shirt	1171	22.00
Postmaster - 1 yr po box rent	1172	76.00
	1173	

**TOTAL EXPENSES**

**98.00**      **0.00**

**ENDING CASH BALANCE - August 31, 2013**

**7,973.32**      **1,945.45**

Signature:   
 David B Hanson, W7BJ, Treasurer

Date: 9/1/2013



## **NRA Special Event Operation**

**By John Broughton, WB9VGJ**

YARC will be sponsoring a special event operation Sunday, November 17<sup>th</sup> to celebrate the 142<sup>nd</sup> birthday of the National Rifle Association. We will be operating from Gunsite Academy using one of the radio shacks of Gunsite's owner, Buz Mills, K7GST. We will be using the call sign K7NRA. Mike Campbell of Clarkdale is generously letting us use his call sign as he has done in the past. The operating hours will be from 8:00 a.m. to 5:00 p.m. All YARC members are welcome to participate. You will find Buz's radio shack to be interesting.

The listing for the special event is in the Nov. issue of QST and is on the ARRL's Web site at: <http://www.arrl.org/special-event-stations>

(Just enter K7NRA in the call sign box to search for the entry.)

There is also information on the YARC website about the event:

[http://www.w7yrc.org/special\\_events.htm](http://www.w7yrc.org/special_events.htm)

If you would like to come and participate, please bring a folding chair and whatever snack, lunch and drinks (non-alcoholic) that you would like. There is a refrigerator available in the shack and a bathroom. The club will also be supplying some food.

Buz's address is 3300 West Ravengard Road. Here are the directions to the operating location.

Take Rt. 89 north to Rolling Hills Rd. (at about the 335 1/4 mile mark). Turn left on Rolling Hills Rd. and then turn right at the top of the rise (you'll see a small Gunsite sign with the raven on it) and follow the road to Gunsite. After entering through the Gunsite gate, stay on the road and bear left (actually, straight ahead) instead of turning right into the Gunsite main facility. Stay on this road to 3300 (well marked). Turn right at the 3300 marker following the lane to the gate. Press the call button at this gate and it will be opened (It may already be open.). The barn is under the big tower at the top of the hill. Drive through the gate and straight up the hill to the barn.

Be aware that the speed limit on Rolling Hills Rd. is only 25 mph and it is reported the police keep an eye on speeders. It is too easy to drive faster than that, as it is a rural paved road.

If you need to contact us for directions on your way in, we'll be on the VVARA repeater. If the repeater is busy, you can call on 147.420 simplex.

I encourage any and all YARC members to participate in this event if possible. Please contact me if you have any questions. The past events have been a lot of fun. Buz is a great host and there was a lot of socializing as well as operating.

73,

John, WB9VGJ

928-775-2259

wb9vgj@arrl.net

## **Need Cards Checked for ARRL Operating Awards?**

Jim Zimmerman, N6KZ can check your QSL cards for DXCC, WAS, VUCC, WAC, etc.

For information contact Jim at: (928) 713-0542.

Jim's QTH is at: 778 Grapevine Lane,  
Prescott, AZ 86305.

## AMATEUR RADIO EVENT COMMUNICATIONS.....

By Lloyd, WA6ZZJ



YARC Event Communications for 2013 is winding down and will wrap up with the Diabetes Walk on October 19th.

**Saturday, September 7th** there were nine YARC members involved with communications for the March

of Dimes March for Babies in Prescott. This year's route was the same as last year and five different positions were manned throughout the event. Amateurs involved were: KD7VBG, W7PRG, KF6SPS, N7RIS, KE7DTR, AE7BK, KF7PQW, KF7RIG and WA6ZZJ.

Lloyd, KF7PQW, and Marjorie, KF7RIG, were called on to do double duty when the March of Dimes volunteers failed to show up at their location so they were providing communications as well as handling the fruit and water distribution. A special thanks to those two for doing all the extra work and still maintaining the communications end.

**Sunday, September 15th** there was once again eight YARC members and one ham from Tempe providing communications for the Skull Valley Loop Challenge. The Loop Challenge is a 54 mile bicycle ride leaving from Goodwin and Montezuma Streets in Prescott, going out Iron Springs Road through Skull Valley and Kirkland then returning via Highway 89 through Wilhoit and on to Prescott. Seven different positions were manned with three being in SAG vehicles and one mobile after riders cleared the Kirkland Aid Station. Amateurs involved in this event were: N7CW, AD7YR, KD7VBG, KE7DTR, N7RIS, WB7RRQ, KB7TRE and WA6ZZJ from YARC and thanks to KF7SVY, Todd, from Tempe for helping.

Thanks to all amateurs who participated in communications for these events. Event communications cannot be conducted without the assistance of dedicated YARC members. As always, the organizers of these events and the charities said they support and appreciate our help....

The upcoming YARC Event Communications schedule for the rest of 2013 is:

**October 4 - 5 (Friday - Saturday) Prescott Rally**

Go to [www.prescottrally.com](http://www.prescottrally.com) and click on "Volunteers" to go to the sign up form. If you have a preference as to where you would like to work, please add a comment in the box at the bottom of the page just above the "Submit" button. Be sure to check the boxes in the form for when you will be available.

**October 19 (Saturday) Step Out Walk for Diabetes**

Contact John, WB9VGJ, for this event.

**Participation in these events also helps YARC maintain its ARRL Special Service Club status .. So.... If you haven't already signed to one or more of these events, now is the time to check your calendar and get your name on the list. ■**

### *Paraprosdokians*

**Paraprosdokians ( Winston Churchill loved them) are figures of speech in which the latter part of a sentence or phrase is surprising or unexpected; frequently humorous. Enjoy!**

1. Where there's a will, I want to be in it.
2. The last thing I want to do is hurt you. But it's still on my list.
3. If I agreed with you, we'd both be wrong.
4. You do not need a parachute to skydive . You only need a parachute to skydive twice.
5. I used to be indecisive. Now I'm not so sure.
6. To be sure of hitting the target, shoot first and call whatever you hit the target.
7. You're never too old to learn something stupid.
8. Change is inevitable, except from a vending machine.
9. I try to watch what I eat and yet my eyes are just not quick enough.
10. I'm supposed to respect my elders, but its getting harder and harder for me to find one now. ■

# High Speed Multi-Media (HSMM-MESH™): The Next Big Thing in Amateur Radio?

By Steve Ikler KS3K

*Reprinted courtesy of Steve, KS3K and the Mid-Atlantic Amateur Radio Club's newsletter "Remarcs"*

Many people in amateur radio firmly believe that High Speed Multi-Media (HSMM) already IS the next big thing. Basically, HSMM-MESH™ is the broadband hamnet. It is the implementation of wireless data networks over amateur radio frequencies using commercial off-the-shelf (COTS) hardware such as 802.11 access points<sup>2</sup>. Did you know that some of the standard channels in a wi-fi router in the US share their frequencies with a ham radio band? We have an allocation of 2.390 GHz to 2.450 GHz and wi-fi channels 1-6 fall into that range.

Wi-fi devices operate under FCC Part 15 rules and therefore must use very low power and low-gain antennas. However, we US hams are regulated by FCC Part 97 rules which allows us to use much higher power and high gain antennas. The HSMM-MESH™ project takes standard wi-fi routers and changes the firmware to make it a Part 97 device. Flashing the firmware totally reconfigures the router and basically turns it into a repeater with extra functionality.

So now we have wi-fi on steroids. What can we do with this? We can create high-speed data networks with a range that far exceeds standard wi-fi networks. When I say high speed I mean HIGH SPEED. PACKET can do 1.2Kb/sec or 9.6Kb/sec. 802.11b wireless routers can do 10 Mb/sec. 802.11g wireless routers can do 54 Mb/sec! With high gain antennas and a little more power these networks can communicate up to 10 miles (line-of-sight). The 802.11g standard uses OFDM (Orthogonal Frequency Division Multiplexing) so that allows power outputs of 1500 W PEP when operated as a Part 97 device by licensed amateurs. The 802.11b standard uses Direct Sequence Spread Spectrum (DSSS) so that limits hams to just 10 W PEP. When the firmware of the device is changed, it uses the 802.11g standard so we aren't limited to the Spread Spectrum speeds.

Each device on the network is called a node. Mesh nodes use peer-to-peer connections. This means each node connects to all others, not the star configuration where all users connect to a single access point<sup>3</sup>. If one node cannot see its desired destination, but CAN see nodes in between, the data will hop from one to the next until the final connection is made. All of this is done automatically. If one repeating node falls out, the software automatically re-routes traffic through other available nodes. Mesh nodes don't need any computer to be attached to pass data to other mesh nodes. Just plug one in and it will expand the mesh.

All HSMM-MESH™ nodes use channel 1 to insure interoperability. Unfortunately, not all brands and models of wi-fi devices are capable of being modified into HSMM-MESH™ nodes. Also, the software that changes the firmware is only compatible with select brands and models. For the most part, hams are using Linksys WRT54G (version 1-4) wi-fi routers. HSMM-MESH™ is a high speed, self-discovering, self-configuring, fault tolerant, wireless computer network. Any resource made available to one of the nodes on the network becomes available to all nodes. These resources can be:

- Computers
- External Drives
- Webcams
- IP Cameras
- Internet Connectivity \* (see below)
- VoIP Phones
- Servers

Anything that 'talks' over a computer network The main use of HSMM-MESH™ nodes has been in the area of emergency communications. You can connect an IP camera to any node on the network and event coordinators can see the video of the event in real-time. VoIP phones can be used to provide voice communications throughout the network.

Many operators of Mesh networks are tempted to include internet access. Internet access on one node provides internet access to all nodes. Using this network, you can provide internet access to remote facilities where phone lines or cable TV lines would be prohibitive.

Sounds great, right? Not so fast. Remember, these devices are no longer operating under Part 15 rules. They operate under Part 97 rules; you cannot use ham radio to transmit commercial data (i.e. advertising). Most websites include advertising or other data that is prohibited by amateur radio, so transmitting that data over an HSMM-MESH™ network is illegal. Many websites use HTTPS to encrypt sensitive data. Ham radio cannot transmit encrypted data.

The question of liability is an open issue. Suppose the network is used to transmit (or re-transmit) illegal data. Who is the control operator? This data may travel through several nodes operated and owned by different licensed hams. You may not even know which nodes pass the data through. The network automatically routes the data using the least number of hops.

More Gotchas ...

At the frequencies in use, coax losses are extremely high. Runs must be kept very short. In many cases, even

direct line-of-sight may not work. Buildings, trees and other structures can impact signal strength greatly.

Mesh Node Examples:

Here are examples of how to make stand alone mounts for a mesh node. The white pole is an Omni antenna. The enclosure is a plastic sprinkler controller box from a major home improvement chain store.

Learn more about it at: <http://www.hsmm-mesh.org> ■

References:

- 1) The HSMM-MESH trademark is owned by the work-group at HSMM-MESH.org
- 2) <http://hsmm.wikispaces.com/>
- 3) Courtesy hsmm-mesh.org, used with permission



Mesh Node on a Van



Uni-directional node

## Home For Sale

4-bedroom, two bath home with external granny flat having full bathroom and workshop setup for ham radio with crank-up tower and beam.

Call Dick, W7QHE 928-636-9823 if interested.

## VE Testing

By Don Bauer, WB7TPH

The next license test session is November 2, at 9:00AM, in the Jeep Posse Building. Any members who wish to get licensed for the first time, or upgrade, are encouraged to pre-register for the session. This will be the last test session this year. So, if you had a goal to get that license this year, here is your chance.

The next licensing class is scheduled on October 26, at Embry-Riddle. Jack Crabtree W7JLC has an announcement on our website. Check the "classes" page at [www.W7YRC.org](http://www.W7YRC.org).

## Free Amateur Radio License Course

The Yavapai Amateur Radio Club and Embry-Riddle Aeronautical University's Eagle Amateur Radio Club to Host Free Amateur Radio License Course

The Yavapai Amateur Radio Club and the Eagle Amateur Radio Club will host an one-day course designed to help you get your ham radio license. The Technician Class Amateur Radio License course will be on Saturday, October 26. This course, open to all interested, is designed to prepare students for the entry level Technician Class license exam. This license will allow all VHF and UHF amateur radio privileges. No Morse code is required.

The class will be conducted at Embry-Riddle Aeronautical University (ERAU), in room 103 of the Aerospace Experimentation and Fabrication Building (AXFAB, building 75). The ERAU address is 3700 Willow Creek Rd in Prescott, AZ.

The course will start at 8:00 A.M. and will conclude about 4:30 P.M. There will be half hour lunch break at about noon. Students should bring a sack lunch or a buffet style lunch is available at the ERAU cafeteria for about \$8.00.

An examination session will be conducted on Saturday, November 2nd, for all license classes. The test session will be at the Jeep Posse building, in Pioneer Park, in Prescott, AZ. The exam session will start at 9:00 A.M. You will need a photo ID for the exam. The cost for the exam is \$15.00. The Technician level exam is a multiple choice 35-question test. You must get a minimum of 26 correct answers to qualify for your license.

Preregistration is requested for both the license course and the examination sessions.

-For the course registration contact Jack Crabtree at [jscra@cableone.net](mailto:jscra@cableone.net), or 928-771-2344.

-For the exam registration, email: [testing@w7yrc.org](mailto:testing@w7yrc.org)

Those registered will be provided addition information including an ERAU campus map via email. Early registration is encouraged. The recommended but optional ARRL License Manual is available for purchase at a group discount rate.

Contact Jack Crabtree at the above for more information.

## Upcoming Events

- **September 28, 2013** – Groom Creek Classic
- **October 4 -5, 2013** -Prescott Rally
- **October 12, 2013** - Mohave Amateur Radio Club Hamfest in Kingman, Arizona
- **October 12 - 13, 2013** - Arizona QSO Party
- **October 19, 2013** - Step Out Walk for Diabetes
- **October 26, 2013** - Amateur Radio License Course
- **November 2, 2013** - License Test Session
- **November 17, 2013** - NRA Special Event Operation

## Club contacts - At a Glance

President - WB7TPH	<a href="mailto:president@w7yrc.org">president@w7yrc.org</a>
Vice President -	<a href="mailto:vice.president@w7yrc.org">vice.president@w7yrc.org</a>
Secretary - AE7CG	<a href="mailto:secretary@w7yrc.org">secretary@w7yrc.org</a>
Treasurer - W7BJ	<a href="mailto:treasurer@w7yrc.org">treasurer@w7yrc.org</a>
Board Member - AD7YR	<a href="mailto:cgrobeck@gmail.com">cgrobeck@gmail.com</a>
Board Member - W7HAM	<a href="mailto:smokey7@cableone.net">smokey7@cableone.net</a>
Board Member - WB7RRQ	<a href="mailto:rosevear520@cableone.net">rosevear520@cableone.net</a>
Board Member - KD5VRW	<a href="mailto:rnpublish@sbcglobal.net">rnpublish@sbcglobal.net</a>
Arizona WAC Administrator	<a href="mailto:az.wac@w7yrc.org">az.wac@w7yrc.org</a>
Ask Elmer for Help	<a href="mailto:ask.elmer@w7yrc.org">ask.elmer@w7yrc.org</a>
Badges	<a href="mailto:badges@w7yrc.org">badges@w7yrc.org</a>
Field Day Chairman	<a href="mailto:field.day@w7yrc.org">field.day@w7yrc.org</a>
Fox Hunts	<a href="mailto:fox.hunt@w7yrc.org">fox.hunt@w7yrc.org</a>
License Classes	<a href="mailto:classes@w7yrc.org">classes@w7yrc.org</a>
Mail List	<a href="mailto:yarc_mail@w7yrc.org">yarc_mail@w7yrc.org</a>
Membership Application	<a href="mailto:membership@w7yrc.org">membership@w7yrc.org</a>
Net Manager	<a href="mailto:net.manager@w7yrc.org">net.manager@w7yrc.org</a>
Newsletter Editor	<a href="mailto:newsletter@w7yrc.org">newsletter@w7yrc.org</a>
Program Inputs	<a href="mailto:programs@w7yrc.org">programs@w7yrc.org</a>
Public Information Officer	<a href="mailto:pio@w7yrc.org">pio@w7yrc.org</a>
Public Service - DEC	<a href="mailto:public.service@w7yrc.org">public.service@w7yrc.org</a>
Repeater Trustee	<a href="mailto:repeater@w7yrc.org">repeater@w7yrc.org</a>
Special Events	<a href="mailto:special.event@w7yrc.org">special.event@w7yrc.org</a>
VE Test Liaison	<a href="mailto:testing@w7yrc.org">testing@w7yrc.org</a>
YARC Party Coordinator	<a href="mailto:yarc.party@w7yrc.org">yarc.party@w7yrc.org</a>
Information	<a href="mailto:info@w7yrc.org">info@w7yrc.org</a>
Webmaster	<a href="mailto:yarc@w7yrc.org">yarc@w7yrc.org</a>
Webmaster	<a href="mailto:w7yrc@w7yrc.org">w7yrc@w7yrc.org</a>
Webmaster	<a href="mailto:webmaster@w7yrc.org">webmaster@w7yrc.org</a>

## Area Repeaters

### Weekly Breakfasts



#### Wed. Morning Breakfast:

7:00 a.m. at

**Iron Horse Restaurant**

(Hwy 89 in Chino Valley)

(N 34°43'56.5" W112°27'15.4")

*informal – all are invited*

#### Breakfast at Masonic Lodge: 3rd Saturday of each Month at 9:00 a.m.

(1280 Willow Creek Road,

2<sup>nd</sup> Floor; above Bank of America)

*informal – all are invited*

\* Location data (per WGS84) provided  
by Fred Zimmermann, N7PJJ

Freq.	PL	Location	Owner/ Club	Auto- Patch	Links	Vo IP	Notes:
52.560-	100.0	Mt. Union	N7NGM			IRLP	Node 3301
144.390	Simplex						APRS- www.aprs.fi
145.290-	127.3	Mingus Mtn.	K7YCA				ARES/RACES
145.350-	162.2	Wildflower	W7QHC				Dawn
146.760-	131.8	Hayden Peak	N7SKO				WECOM INC
146.780-	91.5	Bill Williams Mtn.	K7NAZ			IRLP	BWMRC LITZ, 3178
146.880-	100.0	Prescott Heights	W7YRC				YARC
146.920-	162.2	Mount Ord	W7MDY				ARA
146.980-	162.2	Mt. Elden	W7ARA				ARA
147.000+	162.2	Mingus Mt.	K7MRG				MMRG
147.140+	162.2	Mt. Elden	W7ARA				ARA
147.220+	162.2	Mingus Mtn	W7EI				VVARA LITZ
147.260+	103.5	Mt. Union	K7YCA				ARES/RACES
147.260+	127.3	Mt. Francis	K7YCA				ARES/RACES
147.360+	162.2	Mt. Ord	W7MDY				ARA
442.150+	100.0	Mingus Mtn	WA7UID				MMRG
446.025	Simplex		N7NGM			Echo	
448.475-	100	Mt. Elden	W7ARA				ARA
448.875-	100.0	Mt. Elden	W7ARA				ARA
449.250-	192.8	Chino Valley	K7POF				
449.7250-	107.2	Mingus Mtn	K6DLP				
927.0875-	151.4	Mingus Mtn	WB7BYV				
927.3875-	151.4	Prescott	WB7BYV			Echo	ARA

**Y.A.R.C. IRLP NODE**  
**Node Number 3182**  
146.100 MHz No PL Tone

**T-Hunt Frequencies:**  

**Primary - 145.100 MHz**  
**Secondary - 146.565**

For more Repeater Information & Listings refer to:

- [www.w7ara.org/Web/](http://www.w7ara.org/Web/)
- [www.azrepeaters.net](http://www.azrepeaters.net)
- [www.azfreqcoord.org/listings.htm](http://www.azfreqcoord.org/listings.htm)

## YAVAPAI AMATEUR RADIO CLUB

P.O. BOX 11994

PRESCOTT, AZ 86304

Visit us on the web at <http://www.w7yrc.org>

Many thanks to Dick Hughes, W6CCD, our Webmaster

