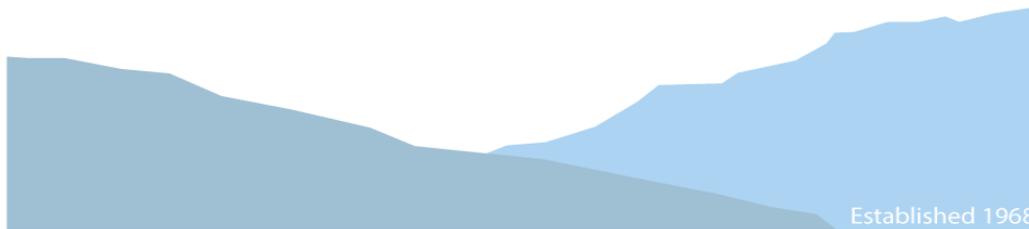


CRACKLIN' STATIC



SIERRA NEVADA Amateur Radio Society

Serving the Amateur Radio Community since April 16, 1968

<http://www.snars.org>

RENO, NEVADA

SEPTEMBER 2014

----PRESIDENT'S VOICE----

It's September.... Soon we will be commenting on the amount of snow and cold temps and the remembrance of rain storms and mud slides will be history.

With The coming of September will be a lot of club activity, and the opportunity to mingle with fellow members. The list of events follows, with details about them to be found in the newsletter contents.

The regular items are:

- 09/06: Monthly club meeting.
- 09/10: Tech Committee meeting.
- 09/19: Board of Directors meeting.

Special events: 09/27: The Club Fall Swap Meet at the Tamarack.
Info at: www.RenoHamSwap.com

09/06: Discussion of activities and training opportunities by Steve Kometz, N7KP & John Byerly, N7ROJ at the Club meeting.

Some members of the Tech Committee went to the Winnemucca Mountain Radio site to meet with the NDOW radio supervisor in mid-August. Much was accomplished in preparation for the actual installation of the radio, repeater and antenna at the site. That will be accomplished ASAP, given folks with full-time jobs and other family and business priorities.

We are working on the October Nevada sesquicentennial activities for 10/30/14 when we will do a reenactment of the sending of the statehood document to President Lincoln which was subsequently signed by him creating the State of Nevada.

The club needs a few good men..... You will read an article done by Steve Kometz, N7KP regarding the training of some volunteer members on the needs of the Tech committee to work on various parts of our radio system. Steve will also do a presentation at the Sep. Club meeting on how you can help and the training that he and others will provide. Please think about helping.

SNARS meeting September 6



7:30 AM Denny's, 205 East Nugget Ave, Sparks

Steve Kometz, N7KP and John Byerly, N7ROJ will talk about training for the Tech Committee.



SNARS, P.O. Box 7727, Reno, NV 89510

Membership: \$40 Individual, \$50 Family

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CRACKLIN' STATIC PUBLICATION

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Material for publication may be edited to enhance readability or to save space. We reserve the right to use whatever font size or line spacing may be required in order to publish this Newsletter.

Deadline for input to the newsletter is 1500 hours on the Sunday prior to the 1st Saturday of each month.

Cracklin' Static is e-published in Adobe PDF Format. It may be enjoyed at the SNARS web site.

Amateur Radio License Testing 2014

SNARS, Third Saturday of February, April, June, August, October and December. Testing will be at the REOC located at 5195 Spectrum Blvd., be there at 9 AM sharp!

..... Bill Nichols... NN7K

SIERA CLUB: Silver State Charter High School, 788 Fairview Dr, Carson City..... 3rd Saturday of January, March, May, July, September, and November

.....Dale Anderson, kv7s@charter.net

Elko Area: Third Saturday of January, April, July, October. 11:00AM, Northeast Nevada Regional Hospital, 2001 Errecart Boulevard, Elko, NV

.....Joe Giraud, N7JEH n7jeh@arrl.net

SNARS Repeater System Frequencies

Linked System --- Reno, Carson Area

146.610 (-) PL 123.0

443.075 (+) PL 123.0

Lovelock & Black Rock area

146.925 (-) PL 123.0

Mt Rose Linked System

147.030 (+) PL 123.0 Virginia Peak

147.150 (+) PL 123.0 Mt Rose

147.210 (+) PL 100.0 Peavine Peak

444.925 (+) PL 100.0 Peavine Peak

444.875 (+) PL 100.0 Lobdelle Peak

GSR Linked System

147.300 (+) PL 123.0 Grand Sierra Resort

444.825 (+) PL 123.0 Mt Davidson

IRLP: 7873, Echolink:WA7DG/R (581256)

Rag Chew 147.390 (+) PL 100.0 (no link)

52.580 (-) PL 114.8 (no link or features)

Packet 145.050

APRS 144.390

D-Star 444.625 (+) N7NDS B, N7NDS G

The Name of the Game

Jim Shepherd, W6US

nvjims@gmail.com

Handheld Antennas

A common misconception is that the longer the antenna, the better it works. In reality, this is not true. Antenna design for handhelds has to take a lot of things into consideration.

The first item is to have an impedance match to the output of the transmitter. Any mismatch in this parameter will not allow a full transfer of power to the antenna. We tend to assume that all the radios are designed to work into a 50 ohm load, but that is not true. A popular commercial 2 meter handheld radio that is showing up in the used market has a 30 ohm impedance output. Other radios have different transmit impedances.

The case of the radio, and its connection to the hand and body of the radio operator, is also part of the antenna system. On a hot day, when you are sweating and hanging on to a hot radio with your bare hand, that coupling is very good. In the winter, when you are cold and wearing dry gloves, that connection is not very good. Since the typical rubber ducky antenna is half of a dipole, and the case and anything connected to it is the other half of that dipole. This changes the tuning of the antenna system. Proximity to other conductive surfaces will also have effects on the tuning and radiation characteristics of the antenna.

The efficiency of the antenna is to a large extent determined by the tuning of the antenna. A resonant antenna tends to be a better radiator than a non-resonant antenna. Remember, you can have a perfect impedance match, and if that load is not resonant, you will not get a radiated signal. This is what occurs with a dummy load. If your antenna system is tuned for resonance at 146.000 MHz, that is where the best radiation will occur. As you move away from that frequency, the radiation will drop off and the SWR will increase.

Standing Wave Ratio (SWR) by itself does not mean resonance. A dummy load has a 1:1 SWR and it is definitely not resonant. An ideal horizontal dipole antenna will have an impedance of about 72 ohms at resonance and would show a SWR of about 1.45:1. What SWR does tell you is that power is being reflected back into the radio and that doesn't help your signal. As you

move away from the resonant frequency, more power will be reflected back into your radio instead of being radiated out of the antenna.

Another factor is polarization of the antenna's output. In the FM handheld world, that polarization is vertical. We take great care to mount the antennas at the repeaters vertically and for best results, you should hold your handheld with its antenna straight up and down.

Now, let's throw all these factors together and look at your antenna system on the handheld. Just increasing the length will change the point of resonance. That increase in length must coincide with the resonance points of the frequency you are using. Telescoping antennas are a good example. A proper one should be a quarter wavelength long when it is fully collapsed to be resonant in that position and a multiple of a quarter wavelength at the fully extended position. These two lengths are seldom the case as these antennas are used on multiple frequencies, including the business and government parts of the 2 meter band.

Any additional gain achieved from the longer antennas is thrown away if that antenna is not vertical. If your antenna is horizontal, there is about a 20 db loss. That 5 watt handheld suddenly becomes a 0.04 watt handheld if it is held horizontal and the axis of that antenna is perpendicular to the distant antenna. The radiation pattern of the antenna is similar to sliding a donut over it. The outside edge of the donut is the direction of the strongest signal and it progressively gets weaker as you move along its surface to the hole. Pointing your antenna at the distant radio will provide an extremely weak signal. Having a long rubber ducky with the end flopping over almost horizontal is not doing you much good, especially when that end is pointed toward the repeater.

Here in town, this isn't noticed as much as the signals from the repeaters are strong enough to overcome most of the attenuation from mis-positioned antennas. Your signal getting to the repeater is another matter. In the fringe areas, you can easily make your signal unreadable while still hearing a good signal from the repeater. 2meter repeaters in this area vary from 50 to over 100 watts into good antennas.

Getting back to the original parameters of the antennas, the aftermarket antennas are usually designed for use on all models of radios that have the same connector. The antenna that came with your radio is usually engineered to work with the correct parameters for that radio. They are usually resonant in the middle of the band and are designed to have enough bandwidth to cover the radio's range. Yes, the overall length is not a multiple of a quarter wavelength, but if you were to dismantle the antenna you would find a coil of wire to make it electrically the right length for resonance.

Handhelds can also be attached to mobile or base station antennas. These antennas will use a coax connection from the radio and will really improve the performance. It is amazing what you can do with a 5 watt handheld and a 20 element yagi... A mag mount with a good resonant

antenna on the roof of your car will be much better than any handheld antenna and it will be vertical unlike a long rubber ducky which will be tilted over at some angle unless you are in a convertible with the top down.

Finally, you need to make sure any aftermarket antenna is not unduly stressing the antenna connector on your radio. SMA connectors are especially subject to breakage if they are bent. Most factory antennas are designed to limit any bending, but replacements and adapters can put all the stress on the connector. Repairs are very expensive as a lot of the connectors are permanently molded into the case of the radio.

Under the right conditions, you can get increased performance from an aftermarket antenna, but you need to be aware of the limitations.

Weekly nets on the SNARS repeater systems

- Western Nevada Noon net (daily, 12:00 PM)**
147.150 + 123.0, 147.210 + 100.0, 147.030 + 123.0, 444.875 + 100.0
- The Morning Net (Monday – Friday at 10:00 AM)**
147.300 + 123.0
- Bishops Storehouse Net (Monday nights at 9:15 PM)**
147.150 + 123.0, 147.210 + 100.0, 147.030 + 123.0, 444.875 + 100.0
- North Western Nevada ARES Net (Tuesday nights at 7:00 PM)**
147.150 + 123.0, 147.210 + 100.0, 147.030 + 123.0, 444.875 + 100.0
- State SATERN Net (Tuesday nights at 8:00 PM)**
147.300 + 123.0

- State SKYWARN Net (Wednesday nights at 7:00 PM)**
147.150 + 123.0, 147.210 + 100.0, 147.030 + 123.0, 444.875 + 100.0
- Northern Nevada Preppers Group Net (Wednesday nights at 8:00 PM)**
147.150 + 123.0, 147.210 + 100.0, 147.030 + 123.0, 444.875 + 100.0
- State ARES Net (Thursday nights at 7:00 PM)**
147.300 + 123.0
- SNARS New Ham Net (Sunday afternoons at 1:00 PM)**
146.610 - 123.0, 443.075 + 123.0, 146.925 – 123.0



COMMUNICATIONS EVENTS

Below is the list of this summer's list of events that require Amateur Radio Communications. If you want to participate, email the contacts shown below.

Bob WA6MTY wa6mty@gbis.com
Washoe County EC

EVENT 2014	START DATE	DATE END	SPONSOR/ ORGANIZER	CONTACT	WEBSITE
Reno Air-Races	9/10/14	9/14		wa6mty@gbis.com	http://www.airrace.org/
Sierra Valley Gran Fondo	9/14/14		Reno Cycling Club	wa6mty@gbis.com	http://svgf.org/
Edible Pedal 100	9/21/14		Sunrise Rotary Club	wa6mty@gbis.com	http://www.ediblepedal100.org/



SNARS MEMBERSHIP ROSTER

The membership roster is now available at the SNARS website. – If you see an error, or if an update to info is needed please let us know. Go to <http://snars.org/members> or on the home page click on the members tab at the top. You will also find the membership stats below the roster.

SNARS ANNOUNCES VENUE FOR NVCON 15



The **Boomtown Resort/Casino** in Reno has been picked by the Sierra Nevada Amateur Radio Society as the site for the 2015 ARRL Nevada State Convention.

Known as NVCON, the convention will run May 1-3. Additional details have not been released.

THE NEW HAMS & INFORMATION NET

The New Hams Q&A Net on 146.610. The net is held weekly at 1300, every Sunday afternoon.

The purpose of this net is a Q&A and information net for newly licensed hams and all hams wishing to ask question about different aspects of Ham Radio. It will give new hams in particular a venue for getting on the air in a controlled net moderated by a ham with more experience. The net will be open to any interested ham. Questions will be answered and discussed by the more experienced hams listening on the Net.

For those in the North Valleys who may be out of the range of the 146.610 try using the 443.075 (+/123). It works from Lemmon Valley.

* * * * *

PART 97 STATION IDENTIFICATION

There is a simple reason why stations must transmit their call sign – so people will know who they are talking to. In addition, unidentified transmissions are prohibited. The rules are straightforward in this area. Part 97.119(a) states: “Each amateur radio station, except a space station or telecommand station must transmit its assigned call sign its transmitting channel at the end of each communication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions. No station may transmit unidentified communications or signals, or transmit as the station call sign, any call sign not authorized to the station.” You are not required to give your call sign at the start of a contact.



SNARS TECHNICAL COMMITTEE AND TRAINING ARTICLE

By Steve Kometz N7KP

It occurred to some of us at the Technical committee meeting recently that we are in need of help maintaining the SNARS repeater system and other equipment.

It is VERY difficult and time consuming to try to show people how repeaters and the associated equipment at radio sites works WHILE actually doing a “work party” at a remote location.

This “Catch 22” situation certainly limits the opportunity to accomplish work on the radio systems.

Just getting equipment and tools collected, and traveling to a site and back can take a whole work day.

Some of our key technical committee members work full time and/or have other commitments, so their time is limited.

Often the committee members will just make a trip to work on things without inviting others to help. This is NOT to try to keep secrets, or deny someone the opportunity to participate or learn, it is just a matter of efficiency. They often just happen to be nearby while doing their regular jobs.

With these limitations, I am suggesting that we get a couple more people involved in the work.

I know there are several of you out there that probably have some of the skills needed to participate. We have projects that run from simple guy wires and AC / DC power to complex duplexing and repeater control programming. And lots of stuff in between.

Only a few club members have a lot of actual repeater maintenance experience.

And it is not that any of us are particularly brilliant, nor radio experts, just often YEARS of slogging in the trenches of Land Mobile Radio.

So, I am suggesting (and volunteering) that we conduct “optional” training sessions after the Technical Committee meetings to help members learn more about repeater maintenance.

This may run the gamut from pretty simple stuff, to EXTREMELY complex math involved in combining schemes and the proper use of test equipment.

We can go wherever people want. There are some really knowledgeable people in SNARS, I think we can put our skills together and spread the knowledge. Even have fun in the process.

The technical committee doesn't really need to have dozens of members, but it would sure be nice to have a few more that want to work, and want to develop more skills.

ARES NEWS

The building where we were restoring our truck (ECOMM1) is going up for sale, so we moved out of the location at Valley Rd and will store it in a hangar at Stead Airport after the Air Races are over.

September 7th is the Reno 5000-3 Run, still need radio operator, good training for new Hams. Come on out and help with the communications for the safety of the runners. Contact Doug KA7FOO if you can help, ka7foo@gmail.com

September 5th to the 9th is the Tahoe 200 race around the Tahoe Rim Trail. Need more operators to camp out and help with the Aid Stations on the 8th and 9th. Come help with the safety of the runners, contact Bob WA6MTY at wa6mty@gbis.com if you can help.

September 10th through the 14th we are helping with security during the Air Races. If you want to earn a free pass, valued at over \$300, sign up with Derek Russell KF7KEM at dc-russell@charter.net.

September 14th over in Plumas County is the Sierra Valley Gran Fondo bicycle ride. We need operators for that event to help the event coordinators.

If you want to help out send me an email and I will send the maps. wa6mty@gbis.com

73 Bob WA6MTY

SNARS LADIES

We had 7 ladies present at this months luncheon. Everyone had a good time and enjoyed catching up on all the news. Next month we will be meeting on Sept 10th, the usual time of 11:30 am.

* * * * *

DEALING WITH HOAs and CC&Rs, NEVADA-STYLE by WB2AWQ (Part one of two)

I have the dreaded "CC&Rs" here in Reno. This is an increasingly common problem for hams, and much has been written about stealth antennas. However, I have never seen an article or treatise dealing with a very

We will be meeting at the Cheesecake Factory located inside the Meadowood Mall.

NAME THAT RIG



(Answer on pg 9)

SNARS CALENDAR

06 Sep 2014 | 0730
SNARS Breakfast Meeting
Dennys - 205 Nugget Ave, Sparks

Join us for our Breakfast meeting. All SNARS members and guests are welcome!

10 Sep 2014 | 0600
SNARS Tech Committee Meeting
Regional Emergency Operations Center, 5195 Spectrum Blvd.

The SNARS Tech Committee meets monthly to go over the status of system projects, issues and other topics related to the SNARS repeater and digital systems.

17 Sep 2014 | 1800
SNARS Board of Directors Meeting
Regional Emergency Operations Center, 5195 Spectrum Blvd.

The monthly board of directors meeting is held on the third Wednesday of each month. All members are welcome to attend.

common situation here in Northern Nevada: single story or low house, stucco siding, no big trees, and of course, very dry, rocky, poor quality soil.

I knew, when we bought this house, what I'd be facing, and for four years now I've been experimenting, copying, playing with all manner of antennas. I've reached some solid (I believe) conclusions for stealth operation in the

high desert. No fancy formulas, computer charts, or “test” data, just the operational facts. And I’ve been having a lot of fun in the process!

Howie’s Nevada Stealth Rules:

1. You CAN operate here despite CC&Rs, DXing included!
2. You WON’T be king of the hill!
3. Under equal conditions, heights, etc., full size antennas usually trump any compact, shortened, or otherwise shrunken antenna, commercial or home-built.
4. Those same full size antennas are easier and more predictable to set up than the smaller ones.
5. Most commercial “stealth” antennas, and so-called stealthy antenna wire, aren’t.
6. All those claims that you have to have your antenna high in the air to work DX? Not so much. Here, anyway.
7. Stealth antennas seldom follow established antenna theory, particularly regarding element length.
8. Stucco, with its metal mesh backing, is deadly to RF. It renders inside HF antennas practically useless.

I have 10 “permanent” antennas set up on my property, mostly dipoles or verticals, all full length. I’ve also set up at various times, magnetic loops, Hustler mobile antennas, a Shakespeare Wonderpole-based shortened vertical for 40 meters, base loaded verticals, a helically wound antenna, Hamsticks, large loops and other oddball antennas, all of which left something to be desired when compared to a dipole or vertical for the same band. Each of these was made to work, and some gave decent results but none was up to a full size dipole or vertical. Mag loops do fairly well, as does the Hustler mobile vertical, and these represent to me the next best “stealth” system. The most common problem with many of the alternatives is that they are shortened, and have varying degrees of narrow frequency response and/or low efficiency. Incidentally, all antennas I’ve set up except for the Shakespeare and one end-fed 40M half wave, have been low enough to hide in small trees or behind my privacy fences, either 6 ft or 7 ft.

With simple antennas, there are three desirable characteristics: small size, high efficiency, and broad bandwidth. You can have any two but not all three simultaneously. Mag Loops, built properly, can be very small and efficient, but have very narrow frequency response: about 10Khz on 40 meters. Loaded mobile antennas like the Hustler or Hamstick, also suffer from narrow response (30-40Khz on 40M). They are not as efficient as loops, primarily because of low radiation resistance working against ground resistance. The Wonderpole vertical is a very good performer with fair bandwidth (80Khz on 40M) and much higher radiation

resistance than a Hustler or similar, but it’s 20 ft high, too big, thus stealthy only at night under dark skies.

My verticals are in small trees, and if the element is longer than the tree is high – the case for 30 and a 20M verticals, the extra is simply pulled horizontal and tied off with monofilament line. I use #28 enameled solid magnet wire. Thin? You bet. But it’s all but invisible from more than 20 ft or so, and if it’s not pulled too taut, longevity is not a problem. Plus, if a wire breaks, it isn’t up very high, and can be easily replaced. All of my verticals (in just two trees, 2 elements in one, and 3 in another) have 8 or more ground radials simply laying on the ground, lengths from 5 to 15 ft. Not ideal, but they work pretty well.



This 12 ft tree supports 20 and 30M verticals (or more properly, inverted L quarter wave wires).

For dipoles, I have an 80/40 meter dual element on one fence 7 ft high, and a 15/20 meter dual element on a 6 ft fence. These antennas are made either of the #28 magnet wire, or split #24 insulated speaker wire. I use special screws called Vinyl Window screws, 2-1/2 inch long, which have a shoulder machined into them behind the screw head to space the wire off the fence. This helps when the fence gets wet, as being this close to earth and the fence itself, when it rains the antennas detune down in frequency. The spacing minimizes that detuning. The 80 meter antenna covers about 200 Khz, the rest cover the full band. I have them all normally cut to resonate at least 100Khz above the lower band edge so that when the fence and ground are wet, the antenna is still usable in the CW portion of the band.



Center of a 20/15 meter dual dipole on a 6 ft high fence, using vinyl window screws for wire support. A Euro-block from Radio Shack makes for easy connections.

One major factor when dealing with low antennas is that they tend to be significantly shorter at resonance than when they are elevated more than a 1/4 wavelength or so. The 80 meter dipole measures just 120 feet, while the formula calls for 134 feet. 40 meters is 64 ft vs 67 feet per formula. 20 and 15M dipoles run 1.5 and 1 ft shorter respectively. This effect is due to the proximity (and loss) to ground and to the fences. Verticals do not suffer this effect to nearly the same degree, but they do have

ground losses based on our poor soil and whatever are your ground radial circumstances.



Vinyl window screw, showing shoulder below the head.

(Continued next month)

NAME THAT RIG (from pg 7)

The Drake 2NT transmitter, 2B receiver and 2BQ speaker/Q-multiplier combo was aimed at the upscale Novice market in the early 1960s. The 2NT was 100 watts crystal control, the receiver was a very hot 10 tube triple conversion 80-10 meter radio, and the speaker/Q-multiplier added to the looks and overall receiver performance.

Sierra Nevada Amateur Radio Society

BOARD OF DIRECTORS MEETING

REOC, Wednesday, August 20, 2014

A.

B. Call to Order (N7MSK)

Time: 1758L

1. Board Members Present:

SNARS: N7MSK, N2MOO, KC7STV, N7ACM, W6US, NB6C

2. Guests Present: N7ROJ, KE7CKY

C. Adoption of Agenda

1. Vote to adopt: NB6C Second: N7ACM

III. Reports

1. Chair: (N7MSK) – directed to other reports.

2. Secretary: (NB6C):

a. Current membership – 184

b. Secretary is working on new licensee packets.

c. Upcoming election for 3 board members 2 year positions.

3. Treasurer: (N7ACM):

Bank Balances: Checking \$11,557

Savings \$3,237

PayPal \$2,764

IV. Committee Reports

1. Trustee (KE7VSR) No report

2. Tech Committee (N7ROJ) Tech Committee

Winnemucca Mountain– Duplexer is tuned and is taken to Pat for integration. Pat has the repeater and is operation in full duplex mode. N7ROJ will be giving Pat the link radio soon. A trip to Winnemucca Mountain will be schedule very soon. We need a volunteer to climb the pole

- a. W6US has some work to be done on Toulon.
- b. KC7STV has built some frames for the new direction finding receiving antennas. We are looking for some volunteers to use the direction finding equipment.
- c. WADG had purchased an identifier many years ago. KC7STV had delivered the identifier to N7ROJ. N7ROJ has it running on his desk at home. This identifier is able to fingerprint individual radios. This will help find out who is kerchunking and intentional interference
- d. Mt Rose 147.15 has been aligned.
- e. N7AOR asked when would we install the repeater on Davison he purchased back in the spring. Right now the tech committee has other scheduled tasks to complete first.
- f. If the snow holds off until the end of September we should be good with completing the scheduled task the tech committee set out for this year

3. Education (N7ACM)

- a. Tech Class October 1st. Looking for instructors that want to help.
- b. Looking to have a CW class at REOC. Trying to see if ARRL will sponsor the class
- c. Investigating a general hybrid class
- d. New Ham workshop coming up at REOC
- e. Perhaps have repeater etiquette class
- f. Look at having direction finding class
- g. Upcoming local simplex VHF simplex contest

4. Fall Swap meet scheduled on Saturday 7:00 AM September 27, 2014 at Tamarack Junction.

5. Possible Picnic sponsored by Dave Metz

Report on Nevada 150th celebration participation – N7MSK

- a. Nevada 150th Special Event Station on October 31. Tom Porada KK7YW is working on the details of the activities. KK7YW. Howie WB2AWQ has offered to help.

VI. NVCON 2015 – Looked at 11 different places to have the convention on May 1-3 2015. Carson Valley in is booked and many others are very expensive. Boomtown appears to be the best location for the event. N2MOO moved to approve Boomtown and the location for the 2015 convention and seconded by N7ACM. Motion approved. K5RC will start investigating some larger vendors.

VII. New Business / Other Business

From the floor:

- a. Discussion regarding letter being sent out without consent of the board or operators
- b. We need to work on new logo for convention

VIII. Motion to Adjourn: By: NB6C Second: N7ACM Motion Carried: Meeting adjourned. Time: 1837L