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August 2013

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History: Gary, KQ6RT
Misc Radio: Fred, K6DGW
Sunshine: Richard, WA6RWS
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REPEATERS

145.430 (-0.6 MHz/PL 162.2)
440.575 (+5.0 MHz/PL 162.2)
223.860 (-1.6 MHz/PL 162.2)

CLUB NET

Thursdays, 7:30PM, W6EK/R
145.430

CLUB MEETINGS

Second Friday of the month,
7:30PM at the Auburn City Hall,
1215 Lincoln Way, Auburn CA

CLUB BREAKFAST

Last Sat of the month at Mel's Diner
1730 Grass Valley Hwy, Auburn CA - 8AM

NET CONTROL OPS

Dave Jenkins, WB6RBE
Gary Cunningham, KQ6RT
Norm Medland, W6AFR
Casey McPartland, W7IB

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WEBMASTER & ARRL PIO:

Carl A Schultz, WF6J

Calendar:

Sat 3 August: Patriots Day at William Jessup University, Rocklin

Fri 9 August: Club Meeting

Sat 31 August: Club Breakfast

Sat 19 October: Cystic Fibrosis Bike ride in the Newcastle area



Inside this issue:

- *The Loading Coil*
- *Field Day Attendance*
- *Trapped Verticals (and Radials)*
- *Miscellaneous Radio – Coding & Ham Radio*
- *An Interview with Jerry Unruh W6GU*
- *Board & General Minutes*



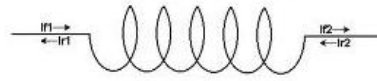
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The Loading Coil

By Bob -K6UDA, President



Most of you old timers know all about QSL cards. QSL or “I confirm the receipt of your transmission” used to be how radio stations and Hams confirmed transmission. Back in the day, Hams almost exclusively confirmed a contact by exchanging QSL cards in the mail. QSL cards and the US Mail went hand in hand for a hundred years.

Fast forward to 2013... The internet (yes, the internet) has infiltrated just about every aspect of human existence including amateur radio. With postage increasing upwards of .50 cents for a first class stamp, many Hams have deeply curtailed sending off QSLs to every contact they make. There are several QSL services out there for confirming on air contacts. Eqsl.cc & LOTW being the two most popular, with Eqsl it’s easy to design your own unique QSL to match your interests, personality, or experience. Using the internet, distributing your personal masterpiece is quick, fun and easy. You can upload it to Eqsl, email it directly to the recipient, or even print it out on card stock and attach a stamp just like in the “olden days”. As a matter of fact, my logging program can take my log entries, fill out a custom QSL, email it, print it, and mark the entry as QSL sent.

Years ago, I looked forward to receiving mail. Now it’s pretty much bills, junk, and the occasional magazine. Lately though because of QSLing, I look forward to getting cards from other Hams across the country and around the world. Some are very plain with just the call sign and information. Others are colorful postcards with cool pictures of a Hams homeland, shack, personalized photo, or hand-written note that really tells a lot about the person. I’ve been so impressed by the feeling I get in receiving these little gifts of confirmation that I’ve started sending out my own little gifts of confirmation.

Confirmation has a lot to do with follow through; “closing the deal” as it were. As a club we’ve become an organization that gets out there and makes lots of contacts. **Carl WF6J** has done an incredible job marketing us to the press and the world. You all have done an incredible job of getting out there and making contacts. Our membership has grown in both numbers and in involvement. Field day is a testament to that fact. I’ve been told FD attendance was typically about 15 to 20 years ago. This year, 80 unique call signs showed up to play. Several non hams also showed up to get involved in the fun.

QSO	DATE	UTC	MHZ	RST	MODE
W1AW/0	2013-06-28	16:37:39	14.25100	55	USB

My Personal Design reflects my racing career. This one was created on my Mac using Adobe Photoshop. It's not often you get to log W1AW. I did.

I see confirmation as a new licensee. When we make those club contacts or personal contacts relating to ham radio, we need to be thinking about “closing the deal.” If someone shows you more than just “oh that’s nice” when you demo the radio and talk to a ham in the UK or Asia. When you do meet the person who has either expressed an interest or has that genuine curiosity about ham radio, its incumbent upon you, the ambassador of the radio airwaves, to strive for confirmation. Because it takes time to prepare for the exam, my thought is to get an email address and either follow up yourself or pass it along to one of the club officers for future follow up.

(Continued on page 3)



Some of the QSL cards I've received both in the mail and online

Some of you may be thinking "we don't need to be growing this fast," well, you're right and you're wrong. While as a club maybe we're approaching saturation...but as an activity we need to increase the numbers in ham radio to persuade the FCC from selling off our bandwidth. I'm of the mind that I'd rather pick up a new ham and feed their contact to another radio club than not follow through to the confirmation. By doing this, new Hams will have great things to say about our club, and other clubs will appreciate getting new members...and this hobby will live on for at least another generation.

Field Day 2013 Attendance

AE6LR	KC6RVO	KG6NYH	KJ6WOL	N7EFM	W7JJB	WB6OVH
AK6OK	KD6MLH	KG6YIE	KK6DHJ	N9EFM	W8BIT	KQ6VP
K4VYL	KE7TVY	KG6YLF	KK6DIO	N9NMA	WAGADY	WA6FGI
K6BAA	KF7EDH	KI6TLZ	KK6EGL	W6DLO	WA6RWS	K6GPB
K6GYB	KF7EDI	KI6UOV	KQ6RT	W6EVA	WA6YYO	N06NO
K6UDA	KF7EDJ	KI6WDY	N6CQX	W6JTR	WA8MPA	K6RUO
K6UVK	KF7QVB	KJ6PUT	N6EMS	W6RBL	WB6EDR	
K6VSS	KG6FFK	KJ6SQO	N6FWD	W6RWL	WE6C	
KB6LMD	KG6LSB	KJ6TFT	N6SHD	W6WEM	WF6J	
KB6NYB	KG6NME	KJ6VGB	N6UWQ	W7BOK	WU6X	

Plus, visitors or XYL's: Toni Graybill, Julie Schmitz, Rob Laurye, Kim Clayworth, Sean Anderson, Olivia Brown, Carol Alford, Lucy Bohnet, Mary Freeland, Doug & Kim Dunn, Donn Bonnet, Diana Bonnet, Belynda Minton, Alexander Anderson, Betty Simpson, Verne Brown, Donna DeAnda, Chris DeAnda, Hunter DeAnda, and Colton DeAnda.

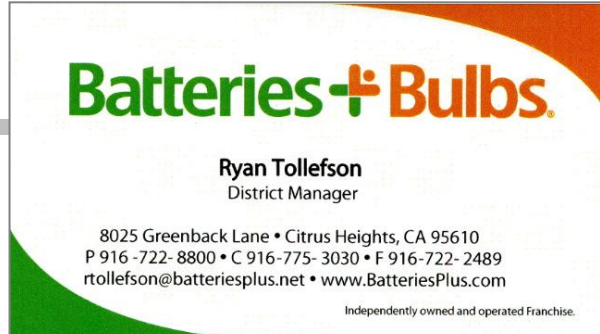


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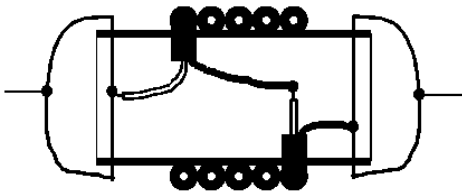
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Trapped Verticals (and Radials)

By Dennis Gregory, WU6X

I've been doing research on building traps for wire antennas for the past few months with the possibility of building a trapped "radial" for my old Hy-Gain 18-AVQ, 5-band HF trapped vertical (80, 40, 20, 15 and 10). The instructions for the vertical note that at least one (1) tuned radial for each band is a must. Multiple radials make this antenna a bit challenging to setup quickly, both due to the space requirement, insulated tie-down issues, and time required to setup the 5 to 10 radials if used portable (e.g. for Field Day).

If you think about it, a trapped vertical is a $\frac{1}{4}$ wave, or one-half of the typical $\frac{1}{2}$ wave dipole, the tuned radials completing the other half. So, the idea of using half of a trapped dipole as a single radial element for the vertical made perfect sense. I found several good "how-to" articles on trapped dipoles and other sites that calculate trap parameters. I finally settled on instructions by NU3E found at: <http://degood.org/coaxtrap/>.



What is a trap? In an antenna, a trap (sometimes called a choke) is a high-impedance element that effectively stops RF from going past the trap (at the resonant frequency) as you move from the feed point outward. For example, the first trap along the wire is tuned for 10m. So, when transmitting on 28.300 Mhz, all following traps and wire lengths are effectively "blocked" to RF going further down the wire. If the next trap is for 15m, then RF will pass through the 10m trap (not resonant on 15m)

which now becomes part of the tuned length for 15m, and so on to the end of the wire. One of the benefits of using traps is they effectively "shorten" the overall length of the antenna; a great compromise for limited space and quick setup, like for Field Day.

For example, the custom tuned radial for 40 thru 10 described here is only 20 feet long. If you consider that a $\frac{1}{2}$ wave dipole for 40m is about 65 feet, the traps trim about 15 feet off the full-size dipole. Adding 80m operation extends the $\frac{1}{4}$ wave length to about 33 feet (or 66 feet for a full size $\frac{1}{2}$ wave "trap" dipole). Considering an 80m dipole is typically approximately 126 feet, you can begin to see the size advantages.

Trap Construction: The traps are made from PVC couplings and RG-58/U coax and took me less than $\frac{1}{2}$ hour each to build; three are required to work 4 bands, since the 40m band takes advantage of all the wire and traps leading up to the end insulator. Note: the 40m trap is only needed to work the 80m band. The "bridle wire" at the end of each trap is 12ga. solid copper. NU3E's diagram follows:

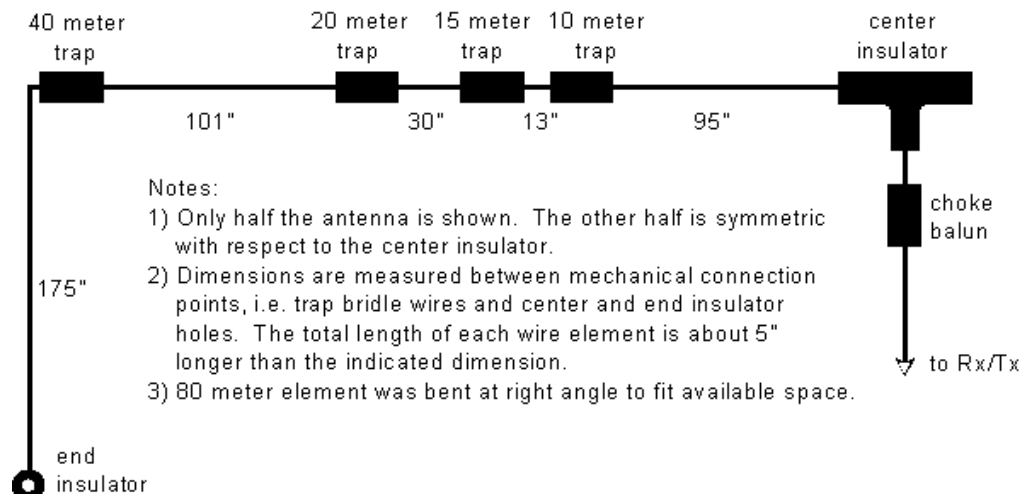
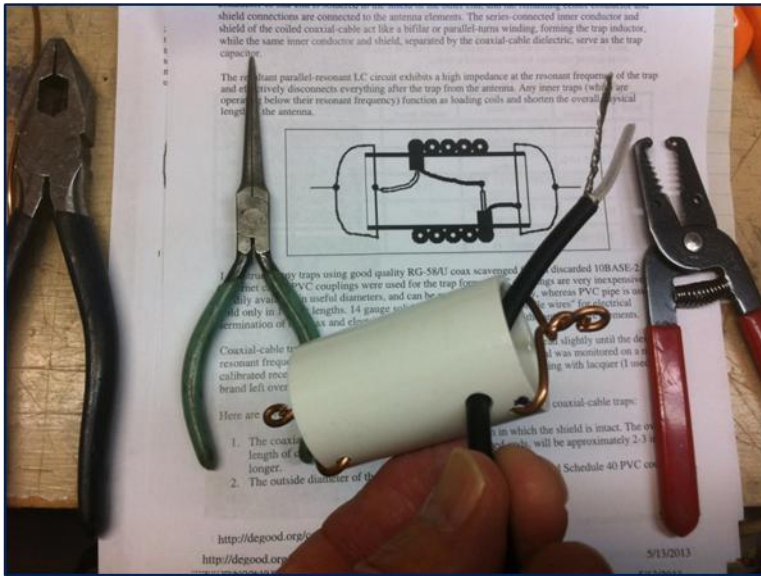


Figure 1 – Half a Dipole

(Continued on page 5)

High and Low “Z”: Remember, that traps become a high impedance (Z) element *at their resonant frequency*, essentially acting as an insulator to effectively disconnect everything after the trap. At non-resonant frequencies, a trap presents a low-Z path to RF through the trap moving down the wire.

No 80m: Referring to the diagram, to remove 80 meters you simply omit the 40 meter trap and everything after it. This places the end insulator where the 40 meter trap should be, to get a 10/15/20/40 antenna (if constructing a full ½ wave dipole). The dimensions of the remainder of the antenna are unaffected except that the 40 meter segments might need lengthened due to removal of end loading provided by a 40 meter trap.



Here are a couple pix of the traps going together. Note that this trap construction technique limits power to 100w. There are other examples on the Internet that will take more power, up to 1kw.



Tuning: An MFJ antenna analyzer will work to tune the traps. My traps came out so close to the design frequencies they didn't require any "tuning", which amounts to spreading the coax on the couplings. To measure a trap's resonant frequency, you simply tune for maximum impedance across the trap as read on the meter, and then view the displayed frequency. If you are close, say within 100khz of 7.1, 14. 2, 21.2, and 28.3, for example, you can compensate by lengthening or shortening the wire between the traps for the desired operating mid-point.

SWR on the Vertical (with trap radial): SWR plots were made with the assistance of a RigExpert antenna analyzer. This is a top-of-the-line instrument that connects between the antenna under test and a computer. The RigExpert instantly plots SWR (vertical axis) vs. frequency (horizontal axis) in 60 seconds. This allows you to make antenna adjustments between the traps and see the result almost instantly. SWR proved to be below 2:1, typically 1.4 or less on all bands except 20m; I think the 20m trap on the vertical took water at some point, so will need to take it apart and check connections.

By working a bit at the tuning phase, both on the traps and antenna wire between them, you can move the center frequency up or down, also affecting the SWR. Another thing I discovered while tuning and trying different orientations for the radial is that the best SWR for my antenna is an approximate 30 degree downward angle off horizontal at the base of the antenna. If you construct this as a full ½ wave dipole or inverted-V, you might keep this in mind when securing the ends, and experiment with different angles.

Performance: During the recent Field Day event I was able to prove the theory and design worked! I made several contacts and A/B tests between a 40/15m inverted-V antenna and the vertical. It appeared that both on the receiving

(Continued on page 6)

station S-meter and my own, the difference between the two antennas showed an approximate 1 S-unit gain, or less, over the trapped vertical/radial combination; what you might expect when comparing vertical and wire antennas on 40m during morning hours.

I made one DX contact with La Paz Mexico with a 10-over nine report from XE2HWJ with only 100w to the vertical on 40m. Since the antenna presents close to a 50-ohm load in the middle of each band, this is also what you might expect. Another report from a portable Colorado station was again, S9 ... good sigs!



Trapped radial off the back of RV: Note the base of the 5-band vertical with homemade tilt-over mechanism that lowers the antenna to the roof

Hopefully, this may peak your interest in either putting that old trap vertical back in service, or building the whole trap dipole as a standalone antenna. I am so impressed with the performance of the traps that I may build the other half soon. My compliments and thanks to **NU3E** for his excellent website and instructions, and to the other authors noted in his article, all who have written articles for QST on trap dipole construction.

By the way, I couldn't find anything by anyone who has built a "trap radial" for use with a trap vertical ... until now!

73,
Dennis –WU6X

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Coding and Ham Radio

Forward Error Correction *The Basics*

Last month, we spent some time developing the concept of Error-Detection ... schemes which allow the receiver to detect if one or more errors occurred during transmission from a channel that adds some random noise to the signal. We can summarize the important characteristics as:

- A) All of the methods involve adding information derived from the data stream to the message, making it longer and thus, for a constant channel data rate, taking more time to send.
- B) Since all the added information comes from the original information, no new information is added and you either need a faster channel to maintain the net data speed, or your net data speed will decrease.
- C) There is no mechanism that will detect all possible errors. To do that, you would have to add an infinite number of additional bits and the message would never end.
- D) Some mechanisms are “better” than others. “Better” is generally taken to mean “able to detect more errors per block of data bits.”

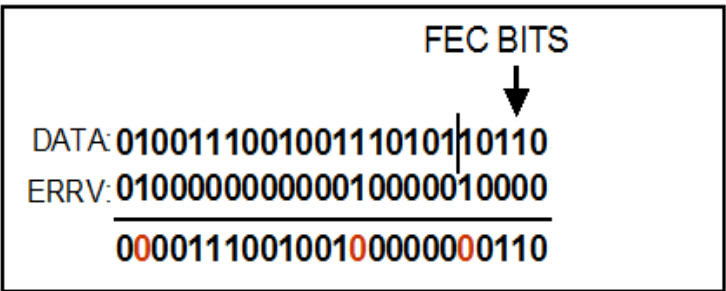
In many [but not all] cases, detection of an error by the receiver initiates a request for retransmission back to the transmitter [often termed “ARQ”] and the bad block is discarded. This of course requires a two-way communications channel, of which there are many examples. The request itself and the retransmission both consume time with the net effect of lowering the net data rate [throughput] on the channel even further, offset by received data with a lowered probability that it contains errors.

Some channels are one-way and there is no way to tell the transmitter to resend the data block. An example is a broadcast channel where a single transmitter is sending to multiple receivers. In some cases, the transmitter does not care if the data block arrived correctly and isn't listening for a retransmission request even if there is a channel to listen on. The familiar HTTP is a “fire and forget” protocol. You request a web page, the server finds it and sends it to you, and immediately forgets who you are and even that someone asked for it. If you don't get it, or it has errors, you can ask again [browsers generally don't unless you tell them to] however if you do ask, the server makes no connection with the first request¹. And, in some cases, neither the transmitter nor the receiver care about errors. Digital TV and cell phones are such cases, which, strangely, leads us to Forward Error Correction or FEC.

FEC works very much like error-detection in that additional bits are added to the message. Like error-detection, such as a CRC, FEC adds bits derived from the data message [and thus redundancy and no additional information] to the data message, and like error-detection, you either provide a faster channel or suffer a lowered net data rate. Unlike error-detection however, these additional bits can be used to correct a limited number of errors at the receiver without requiring an ARQ, effectively allowing the transmitter to operate in “fire and forget” mode. In the case of digital TV or cell phones, the FEC corrects the errors it can, and if any sneak through, you see a pixel-freeze or your phone makes a bathroom noise and you ignore it.

Consider the model of a noisy communications channel from last month. In this case, I've added 5 forward error correction bits² to the 19 data bits to make a 24 bit block. The error vector also extends of course, and I included a one bit error that affects the first FEC bit just for grins.

We now transmit 24 bits per block instead of 19, so if the channel speed is 1200 bps, the net data rate has now



1 Web servers do all sorts of things to help increase the response speed such as caching frequently requested pages, but HTTP itself does not remember past requests. It is an “application layer” protocol and assumes that the network layers below it will take care of any errors.
2 These are not “real” FEC bits, I just made them up to illustrate the point

dropped to 950 bps [1200 x (19 / 24)]. How does the receiver employ the 5 FEC bits to correct the three errors in the message?

If there were some way that, using only the received 24-bit block, we could recover the error vector of noise in the channel that corrupted the block, we're home free. Since we're in binary, there are only two possible values for each bit and if I know which bits were corrupted, I know that the correct value for each error is the other value. If you remember how the noise in the channel that creates the errors in the bits was modeled, all we have to do is Boolean-add [i.e Exclusive-OR] the recovered error vector with the received block, it will invert all the error bits, and we've corrected our message without asking for a retransmission.

Obviously, this scheme all depends on finding some method to derive the error vector that corrupted the block from the received block. Finding such a method is the "meat-and-potatoes" of Information Theory, and the techniques are beyond Miscellaneous Radio. I can assure you however that there are multiple ways to do it and we'll look at a couple or so from about 30,000 ft in succeeding issues of Sierra Signals.

What happens when the number of bits in error in the received message exceed the correction capability of the FEC? Well, forward error correction is a one-way process. The message arrives, the FEC algorithms are executed, and in all cases, they report a data block. If the number of actual errors is less than or equal to the code's capability, the errors will be corrected. If the number of errors in that block exceed the code's capability, the algorithms will still report a data block, it will just be wrong. Critical applications such as commands to a satellite or spaceship will sometimes reduce this problem by first adding a CRC to detect errors, and then encoding the FEC bits into the new block. Once the FEC decoder reports the data block, the CRC is used to check the data block for errors.

The obvious advantage to FEC is that while we lose some of our data rate in the channel, we don't incur the more severe overhead of retransmissions which can seriously degrade the net data rate. All is not totally rosy however. For a given number of redundancy bits, we can detect more error bits in the block than we can correct with FEC. Furthermore, you can't do both correction and detection with the same bits. The reasons, surprisingly, derives from the familiar Second Law of Thermodynamics ["There is no free lunch in the universe we live in."]³. In the Information Theory world, correcting errors at the receiver from the received data block requires more "information" than just detecting that they occurred. As a result, fewer errors per block can be corrected than detected since the amount of "information" in the block is constant. And, if you've "used" the information to correct the errors, there's no information left to detect any more.

73,

Fred K6DGW
Auburn CA

³ Claude Shannon is the "father" of information theory. In his work in the late 40's, he derived a measure of information content that he called "entropy", borrowing from the Second Law. There is a no doubt apocryphal story that, when asked why he chose that name, he replied, "No one understands thermodynamic entropy and no one will understand mine, so I thought it was a good choice."

An interview with...
SFARC Member: Jerry Unruh W6GU



By Roving Reporter Bob Hicks K6VSS



Jerry was born and grew up in the Long Beach area. Since 1977, he has lived in a home on one acre in Loomis. In 1963, he received his novice amateur radio license. He then upgraded to general, advanced, and now has his extra class license. Jerry has a special past. For 5 to 6 years back in the late 60's and early 70's Jerry worked for Henry Radio in their Anaheim store. He knew both of the Henry brothers. I assume our readers are familiar with the well known Henry KW amplifier. In 2009 Jerry retired from State service where he worked as an engineer in the Communications Division of General Services.

Jerry's first radio was a home built transmitter that utilized a pair of 1625 tubes and could generate 100 watts of output. Jerry later added plate modulation to this transmitter. FYI, the 1625 is a 12 volt version of the better known 807 transmitting tubes. He has owned the National NC-300, and several of the Collins "S" line receivers and transmitters. The present station includes an Icom IC-756 Pro-III, an Alpha 89 amplifier, and an Icom IC-27 for 2 meters. He also has a Yaseu ht connected to a 100 watt amplifier for 2 meter simplex. Antennas used at present include: 160 meter off center fed dipole, 80 meter, and 40 meter dipoles. Other antennas include a KLM KT-34 on a 51 foot tower which also has antennas for 220, 440, and an 8 element beam and a Ringo Ranger vertical for 2 meters.

During the past field day operation, Jerry operated from his home as class 1D and made over 150 contacts. Besides being active in SFARC, Jerry is a member of RCARC and North Hills ARC. Other interests involve teaching and leadership roles in genealogy. He is the past-president of the Placer County Society Genealogical Society, and still does their web page and writes their newsletter.

Jerry's wife passed away 3 years ago. Jerry is active in his hobbies and spends quality time with his family, and his grandchildren. Say hi to Jerry next time you see him.



BOARD OF DIRECTORS MEETING MINUTES

July 12, 2013

The SFARC Board meeting for July commenced at 1800 hours at Round Table Pizza in Auburn.

Roll Call: President Bob Brodovsky-K6UDA and all officers and Directors were present except for Board member Donna-W6CQX who was absent. Also present were PIO Carl-WF6J, Jim-WA8NPA, and guests Bob-WB6VYH, AI-NI2U, Amaryllis - KG6TVT and Toni Graybill.

REPORTS and DISCUSSIONS

President's Report: Bob-K6UDA discussed our planned participation in Patriot's Day at William Jessup University, Aug 3 @ 10a to 5p. To be addressed at the General meeting to ascertain who will attend.

VP's Report: Dave-NO6NO reviewed Tech-10 and main presentation planned for the meeting.

Secretary's Report: Dennis-WU6X reported that Field Day results were now tallied and submitted to ARRL.

Treasurer's Report: Richard-WA6RWS reported net cash on hand at beginning of June as \$7,038.51; expenses of \$352.45; income of \$484.75 and balance of \$7,170.81.

Repeater Report: Richard changed the PTT board on the 220 box in effort to eliminate intermittent problems.

VE Report: Dave-NO6NO reported 11 exams taken; 7 new Tech and 1 Extra passing.

Web/PIO Report: Carl-WF6J suggested live "pod casts" could be developed for the General Meeting and other events. Discussion but no decision.

Other Discussions: Standard or "standing" committee development was discussed for Club events like the Christmas Party, Field Day, Picnic, etc. No decision.

The annual Club picnic was briefly discussed relative to holding it later in the year (October) to avoid the heat, and who might be attending. General agreement from Officers and Board; no decision on date.

Richard suggested that we NOT publish the Member Roster on the Club website for obvious reasons. Even though it is password protected, the fact it gets mailed to all regular members should be sufficient. Carl was directed to remove it from the website.

Jim-WA8NPA offered to get a "podium" or presentation stand that is available as a donation from his work, for use at public events. It would require that transparencies be made to fit the backlit openings. The Board directed Jim to accept the donation. NO6NO-Dave moved, 2nd by W8BIT-Mark, to spend up to \$300 to have the transparencies professionally printed. The motion passed unanimously.

Suggestion by Dennis to hold next month's Board meeting at Mels' Diner; agreement but no decision.

Meeting adjourned at 1845 hours. Submitted by *Dennis Gregory-WU6X, SFARC Club Secretary*



GENERAL MEETING MINUTES

July 12, 2013

The SFARC General meeting for July commenced at 1930 hours at the Auburn City Hall Rose Room, President Bob Brodovsky-K6UDA presiding. All Officers and Directors were present except for Board member Donna-W6CQX; also present were PIO Carl-WF6J. Bob led approximately 39 members and guests in a Pledge of Allegiance to the flag followed by an introduction of Officers, members and guests.

REPORTS and OLD BUSINESS:

Past minutes: The minutes of the past General Meeting, as posted in the Newsletter, were approved as submitted on motion by Tyghe-KD6MLH and 2nd by Paul-KB6NYB.

President's Report: Bob-K6UDA reminded the Membership of our commitment to participate in Patriot's Day at William Jessup University on August 3rd, 10am to 5pm. A show of hands was asked for-approximately 10-15 Members indicated they would; a sign-up sheet was distributed to capture names and phone numbers. Dick-WB6EDR is Chair for this event, assisted by Carl-WF6J. Bob reported on discussions from the Board meeting; committee "realignment" and moving the Club Picnic to October.

VP's Report: Dave-NO6NO reported on Tech-10 and Presentation planned for the evening.

Treasurer's Report: Richard-WA6RWS reported net cash on hand at beginning of June as \$7,038.51; expenses of \$352.45; income of \$484.75 and balance of \$7,170.81. Richard also reminded Members of the Newsletter distribution process and that advertisers were getting a copy as well, and offer a 10% discount to Club members. Some Members reported not getting a discount when asked, for example at Batteries Plus, while others did. Richard recommends asking for the Manager, who should know about the discount.

Secretary's Report: Dennis-WU6X reminded guests and new members to pick up a "Welcome Letter" during the break.

VE's Report: Dave-NO6NO reported 11 exams taken; (7) new Tech and (1) Extra class passing.

Repeater Report: Richard-WA6RWS reported that a push-to-talk board was replaced in the 220 machine in an effort to isolate the intermittent transmit problems.

Satellite Report: Greg-KO6TH reported on the recent Russian Proton-M rocket crash in Kazakhstan due to possible mis-installation of a critical sensor. 3 navigational satellites worth about \$200 million and 600 tons of highly toxic fuel were destroyed. Greg also reminded members of the many websites on the Internet available for information on amateur radio in space.

Sunshine Report: Richard-WA6RWS reported that Casey-W7IB had a knee replaced and doing well. KI6AZH was hospitalized with respiratory problems, but now home and recuperating.

Refreshments and Drawing: Refreshments Chair, Jim-WA8NPA reviewed the "eats and drinks", and while Gene-KG6NYH, sitting-in for KG6LSB on vacation, reported on items available for the drawing.

Jim Venneman-WX6V requested assistance (via email to WU6X) with loading a crank-up tower onto a trailer from a recent estate sale. Unfortunately, no one was able to assist at the time and date requested.

NEW BUSINESS:

Club Picnic: Al-NI2U has volunteered to Chair the planning for this year's Club picnic, to be scheduled for some time in October. Members were asked to please support Al by volunteering when asked.

Awards: Richard-WA6RWS presented Al-NI2U with a lapel pin in appreciation for his continued commitment and service to the Club in many capacities and activities.

General Announcements: The Club Net meets every Thursday's at 7:30; Board and General meetings occur on the 2nd Friday; Board is held at Round Table Pizza at 6pm, and General meetings at 7:30. Club breakfast (last Saturday), the "Prepper Net" and the Elmer Net are held on opposite Wednesday nights at 7:30pm. See W6EK.org for more information or date changes.

Tech-Ten: An excellent presentation on vacuum tubes was given by Greg-KO6TH.

Presentation: Jim Nordstrom-KQ6VP gave a presentation and demonstration on the Winlink communications network. The HF PACTOR mode was demonstrated and discussed with a look at the software used to send/receive messages.

The meeting adjourned at 2120 – Submitted by, Dennis – WU6X, Club Secretary

SIERRA FOOTHILLS AMATEUR RADIO CLUB
P.O. Box 6421, Auburn, CA 95604

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2013 MEMBERSHIP APPLICATION

Name: _____ Call: _____ Class: ____ e-mail: _____
Address: _____ City: _____ State: _____ Zip: _____
Associate Name: _____ Call: _____ Class: ____ email: _____
Phone: _____ Cellphone: _____ Application is: (Circle) New Renewal

Dues / Donations:

Membership: yearly*	\$ 22.00	Name Badge:	\$ 7.00	Yes (special name)_____
Associate: yearly*	\$ 7.00	Repeater Donation:	\$ _____	
Auto Patch Donation:	\$ _____	Newsletter Booster:	\$ _____	
Misc. Donation:	\$ _____	Christmas Donation:	\$ _____	ARRL member? (circle) Yes No

TOTAL: \$ _____ **Please add \$1 if paying via PayPal**

*Prorated dues for NEW Members/Associates Only

July	\$ 20 /6	October	\$ 14/3 + following year
August	\$ 18/5	November	\$ 12/2+ following year
September	\$ 16/4	December	\$ 10/1 + following year

OFFICE USE ONLY:

DO NOT WRITE BELOW THIS LINE

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Payment: _____ Check Number: _____ Cash: _____ PayPal: _____