



Sierra Foothills Amateur Radio Club

SIERRA SIGNALS

<http://www.sf-arc.org/>

JUNE 2011

PO BOX 1005, NEWCASTLE, CA

At the Key of SFARC

OFFICERS

PRESIDENT

Al Martin, NI2U
amartin4@wavecable.com

VICE PRESIDENT

Charles Baker, AE6LR
ae6lr@yahoo.com

SECRETARY

Vacant

TREASURER

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kd6wty@yahoo.com

DIRECTORS

Mary Ann Balthorpe, KE6EST
Gary Cunningham, KQ6RT
Jim Griffith, KI6AZH

Field Day Chairman

Dave Hund, N6SHD

REPORTERS

Satellites: Greg, KO6TH
History: Gary, KQ6RT
Misc Radio: Fred, K6D6W
Sunshine: Richard WA6RWS
rkuepper@gmail.com

RESOURCES

REPEATERS

145.430 (-0.6 MHz/PL 162.2)
440.575 (+5.0 MHz/PL 94.8)
223.860 (-1.6 MHz/PL 100.0)

CLUB NET

Thursdays, 7:30PM, W6EK/R
145.430

CLUB MEETINGS

Second Friday of the month,
7:30PM at the Library, 350
Nevada St, Auburn CA

CLUB BREAKFAST

Last Sat of the month at
Susie's Café, Cirby at
Riverside, Roseville - 8:00 AM

NET CONTROL OPS

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

NEWSLETTER EDITOR

Matthew Diridoni, KC6RUO
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WEBMASTER:

Carl A Schultz, WF6J

Calendar of Events

June

- 10 Club Meeting
- 11-13 June VHF QSO Party
- 25-26 Field Day!**

July

- 8 Club Meeting
- 9-10 IARU HF World Championships

August

- 6-7 August UHF Contest
- 12 Club Meeting
- 21 Rookie Roundup - RTTY
- 20 10 GHz and Up Contest (round 1)

SFARC CLUB MEETING PRESENTATION

June's tech ten will be on "Antennas for Field Day" presented by the "Field Day Committee".

The June program will be "Field Day Preparations" presented by the "Field Day Committee"

Everyone is welcome, bring a friend!

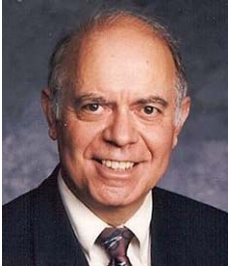
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We encourage members to receive Sierra Signals via email to save the Club the cost of reproduction and mailing

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From The Presidents Shack, Al Martin NI2U



Great news, we have a volunteer for the secretary's position. Dennis WU6X has stepped up and I thank him very much. Also, many thanks go to Richard WA6RWS for his work in filling the position from the beginning of the year.

Maybe I need to take a trip more often. Plenty of good has happened while I was gone. WU6X has the network version of the Logging Program up and running for Field Day.

While I was in Norway, I visited some museums that would be of interest to the club. One that really struck home is the resistance museum that documents the efforts of the Norwegians during WW-2. There are a number of clandestine radios on display of which I took pictures. Also, the Viking museum has on display Viking ships from around the year 1000. The Technical Museum and Folk Museum also have interesting items to show.

Miscellaneous Radio

Power Supplies

Power supplies occupy a place in our ham shacks similar to the seats in our cars ... absolutely necessary but not particularly sexy or interesting. In the early days, and with the advent of the vacuum tube, it was very common for hams to use batteries to power their receivers and transmitters. It took more than one: one low voltage one to light up the filaments, higher voltages [45 – 90V or so] to supply power to the plate circuit. The tubes were triodes at first, so two batteries would do it [sometimes 3, one for negative bias], and some hams actually made the batteries using mason jars filled with electrolyte and connected in series. The tubes of the day had around a 5 watt plate dissipation rating, so at 90V and perhaps 50 ma, you could run about 4 or 5 watts input power [input power was what counted then, you might get half that or a little more in output power]. That's about what my Elecraft KX1 trail radio will make with my little 11.7 V Li-Poly RC battery.

Batteries run down, the only rechargeables at the time were lead-acid batteries used in the telegraph, and something better was needed and soon found – the ubiquitous AC power supply. Today, they come in all shapes and sizes, but the function is basically the same for all of them: Convert 120 V [or 240 V] 60 Hz alternating current we find in the electrical outlets in our homes to direct current at various voltages and current capabilities. Some, in linear amplifiers for example, produce very high voltages. My amplifier [a pair of 3-500Z's] operates at 3.5 KV and draws about 800 mA. That voltage drops to about 3 KV when I press the key for about 2.4 KW input power. At about 50% efficiency, that's 1,200 W output. This power supply is built into the amplifier and you wouldn't really know it is there were it not for the meters on the front and how much the beast weighs.

In the 50's/60's, it was common to have a station power supply, usually under the table, that supplied 6 or 12 VAC to your transmitter filaments, a couple hundred volts DC for the screen grid(s) of your power amplifier tubes, possibly a few tens of volts negative DC for bias, and maybe 800 VDC or so for the plate supply. I still have my 40 meter ARC-5 transmitter in the basement, an old aircraft radio from WW2. I'd put it on the air for Straight Key Night except I don't have a HV power supply for it anymore. But today, at the beginning of the second decade of the 21st century, "station power supply" generally means something that produces 12-14 VDC at 1-40 A from the AC wall outlet. They tend to be separate from the radios.

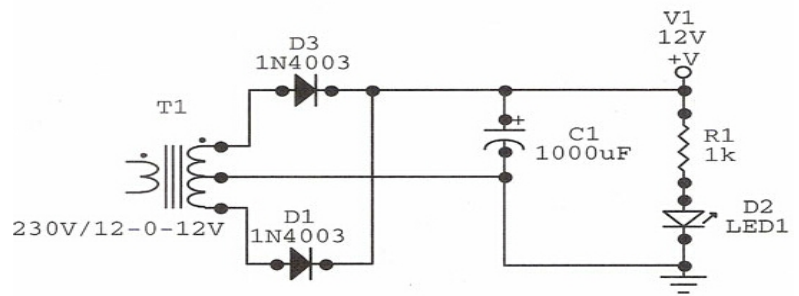


Here's one. ☺ We typically call these "wall warts," and they're usually good for anywhere from maybe 5-24V and maybe 1 A or so. This one powers our Ethernet router. And use care with these little gizmos. They may say "12VDC/1.5A" but they often produce the 12 volts only when fully loaded. At 1/2 load, the voltage may be 18 or more volts which is usually well beyond the input specification of a radio, and they use the term "direct current" fairly loosely. Their regulation is so bad that any device that uses them always has its own internal voltage regulator.

Today's low voltage, high current power supplies come in two basic flavors: Linear and Switch Mode. Let's look at linear first.

We call them linear because, ignoring regulator circuits for a moment, their output voltage is proportional to their input voltage. In fact, we used to capitalize on this characteristic in older high voltage supplies where it was common to put a variac [an adjustable transformer] in the AC supply. Turning it

down lowered the input AC voltage and thus lowered the high voltage DC produced by the supply, and your transmit power proportionally.



Linear supplies all have a single basic architecture: A transformer that converts the input voltage to the range needed, a rectifier circuit to convert the AC from the transformer to pulsating DC, and a filter to get rid of the pulsations and produce steady DC.

The circuit on the right is an example ... transformer, two diodes for the rectifier, and the capacitor for the filter. While there are lots of variants on this basic architecture, they all have this common parent. Often, the output will be fed to a regulator circuit which typically employs feedback to keep the output voltage constant under varying loads.

Our linear supplies universally operate at 120 or 240 VAC at 60 Hz because that's what comes out of the wall socket. And, they have a universal characteristic ... they are heavy. The transformer at 60 Hz needs lots of iron in the core and generally, the transformer is the heaviest component in the supply.

This is the supply I use to power my Elecraft K3/100 and Yaesu FT-847 [plus charge a couple of sealed lead acid batteries]. It is currently set at 14.5 V and is good for 25 A continuously, 35 A intermittently such as for CW or SSB. It weighs 30 lbs, close to twice as much as both radios combined. It has super regulation however -- the voltmeter never wiggles at all regardless of the current being drawn.

60Hz generators are also heavy for two reasons: like transformers, it takes a lot of iron in the generator core at that low frequency, and the engine weighs a lot. The 10 KVA, 120 V, 60 Hz diesel generators [MB-5's] we used in Vietnam were trailer mounted and weighed about 3,900 lbs. For airborne missions, we needed 10 KVA to power our equipment on the mountain tops, but we had to yank all the gear out the back of a low-flying C-130, and MB-5's would never survive. The solution was turbine generators. They ran on JP4 [jet fuel] and could easily be carried by two troops, even at a moderate jog. They ran very fast -- 9,500 RPM vs 1,750 for the diesel units -- and at that speed, they made 400 Hz AC. This was ideal, because transformers operating at 400 Hz require less iron in their cores ... like none, they can be wound on ferrite cores. A side, but not insignificant benefit was that the diesel units rumbled loudly at low frequencies which was very hard to muffle. The turbines produced high frequency noise which was easy to muffle with sand bags, thus attracting less attention to us from "the other guys." ☺

The solution for the heaviness of linear supplies in our shacks draws on that same principle of going to much higher frequencies. The one at the right was given to me by Alan, AD6E, 12 VDC @ 40 A [continuous], and it weighs 3.2 lbs. Note -- no transformer! Well, actually, there are two, they're the donuts on the right wound on ferrite toroids. AC comes in on the cord on the right, DC goes out the pair of wires on the left.



How does it work? Well, the incoming AC directly operates an oscillator that produces a 24 V P-P square wave at about 1,200 Hz. That gets rectified [the diode stacks are underneath and are the second heaviest part of the supply, the heaviest is the steel heat sink on the bottom], filtered and then regulated to between 9 VDC and 19 VDC. The round gizmos are about one farad of capacitance for the filter. We call these switch-mode supplies because the oscillator acts like a switch at the high frequency.

Unfortunately, the Second Law of Thermodynamics ["There is no such thing as a free lunch"] still applies, and the downside to switch-mode supplies is the oscillator. Its square wave output is basically full of harmonics and miscellaneous electromagnetic trash, all of which you will hear in your receiver. My supply is dead quiet however; a few of the small parts on the board are for the regulator, all the rest are noise filtering and suppression. Not all such supplies are quiet, and the only way to really tell is to fire it up, load it, and see what you hear. Many wall warts are switch-mode and can create some nasty hash. In fact, there is a switch-mode supply in the base of most of those helical CFL light bulbs which are also notorious noisemakers.

The weather is finally making summer moves, and E-layer propagation is climbing. There have been lots of 6m spots in the last couple of weeks ... I just heard from good friend Mike, KD9KC in El Paso, who worked Jack, KF6T, about 1.7 mi from me, with 5 W! ... and short-skip on 20 is really picking up. 'Til next month,

From the Press Information Officer

By WF6J

The SFARC Breakfast was a fun event Sunday the 28th. We all got to hear about Al's (NI2U) trip and Richard's (WA6RWS) trip. Then we checked out an old radio in Bob WE6C's trunk. 8 people attended. Dave, N6HSD talked about Field Day.

New photos, links and updates on the club website at: www.sf-arc.org looking for more photos inputs from everyone! Check out: Past Presidents list, Ham Radio Vendor link, Coax attenuation charts link, new photos in Meetings. Classifieds is empty awaiting input from members selling things. Maybe there could be a better use for that page & space? Suggestions please!

Last VE session had 3 new Generals and 1 unsuccessful Extra. Dave, NO6NO is taking over the VE efforts his number is on the website.

73,
Carl WF6J



Silent Key Report

By Matt Diridoni, KC6RUO

Long Time SFARC member Marilyn Taylor, WB6KFL, (or as she used to say on the air "WB6 Kind Friendly Lady" passed away May 23, 2011 at her home in Colfax.

Marilyn is survived by her devoted and loving husband of 48 years, Lenard Taylor, WB6HGS, step sons Charles (Marge) and Robert Taylor, grandchildren Laurel Ann and Ian Taylor, sister Verna Perier (Doyle Dortch), sisters-in-law Gail (Richard) Hansen and Evelyn (Oscar) Wallace; several nieces and nephews and was preceded in death by her sister Betty Ahrendes.



SFARC has testing sessions on the first Saturday of each month at Raley's on the corner of Auburn Folsom Road & Douglas Bl. in Granite Bay. Sessions are in the multi-purpose room in the back left hand corner of the store. The session starts at 8:00 AM



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SFARC Meeting Minutes

BOARD OF DIRECTORS MEETING MINUTES

May 13, 2011

Board meeting commenced at 1800 hours at the Round Table Pizza in the Auburn Town Center.

Present were: Al Martin, NI2U, President; Chuck Baker, AE6LR, VP; Directors: Gary Cunningham, KQ6RT, Jim Griffith, KI6AZH, and Carl Schultz, WF6J, acting secretary, webmaster and PIO. Also present: Jim Carmen, K6ARR. Richard, WA6RWS was out of town.

Al talked about the chart of accounts and new 2011 budget plan. The Treasurer's report will be given at the meeting.

Budgets for Field Day and Club Picnic were discussed and will be presented to the membership for approval.

Al announced the VE program to be taken over by Dave Albright, NO6NO.

An email was received from AA6RS asking for assistance in antenna work. This will be talked about in the meeting.

Carl discussed placing the paid membership roster on the website. This will be brought up to the membership. Chuck said that CALSTAR would be the Tech for Ten, and Dennis, WU6X would present the Field Day LAN and software information at the meeting.

Jim, KI6AZH asked for assistance with installation of new coax at his QTH.

Al said a Field Day signup sheet would be passed out at the meeting. Also a need to have members renew ARRL through the club, plus the need to have 51% ARRL membership for Special Service Club qualifications. Request to add ARRL data to the membership renewal form.

Meeting adjourned at 1849 hours.

Carl, WF6J, acting secretary while WA6RWS was out of town.

Mark Your Calendar



June 25, 26, 2011

BatteriesPlus.

910 Pleasant Grove Blvd. Suite 100
Roseville, CA 95678
(916) 786-2222

8025 Greenback Lane, Suite A,
Citrus Heights, CA 95610
(916) 722-3300

GENERAL MEETING MINUTES

May 13, 2011

General SFARC meeting commenced at 1930 hours at the Placer County Library in Auburn.

Present were: Al Martin, NI2U, President; Chuck Baker, AE6LR, Vice President; Bob Balthrope, KD6WTY, Treasurer. Directors: Gary Cunningham, KQ6RT; Mary Anne Balthrope, KE6EST, and Jim Griffith, KI6AZH. Carl Schultz as acting secretary. Richard Keupper, WA6RWS was out of town.

Al, NI2U led everyone in the Pledge of Allegiance. Then Officers, Directors, members, and guests introduced themselves. Treasurer's report noted \$1,853 with expenses leaving a balance of: \$1,812 in the account.

Al noted that AA6RS asked for assistance with his tower and will get his QTH information. Jim, KI6AZH asked for help at his QTH to do some coax runs (roof work).

Carl, WF6J talked about putting the roster, password protected, onto the website. Burton asked that his telephone number not be shown.

Al asked for a Field Day budget of \$100 (last year was \$220) motion made by Jim KI6AZH, Seconded by Gary and passed. He then asked for a Picnic budget of \$150 Gary made the motion, Seconded by Chuck and passed.

Al announced the net is on Thursdays at 7:30 and the Club Breakfast the last Saturday each month at Suzie's.

Chuck announced the Tech for Ten and Main programs. Gene, KG6NYH gave everyone a look at the prizes for the raffle drawing.

Dave, NO6NO gave a brief talk about taking over the VE Exam program at Raley's. Al asked for a Certificate of Appreciation for all the service given to date. New VE contact number is: 530-823-3387. May 7th VE results: 3 generals and unfortunately an extra attempt didn't pass.

Greg, KO6TH gave an update on Oscar 51 and its current odd cycling and operations.

Break for refreshments.

Tech for Ten was a presentation on CALSTAR given by Sonja Vargas to the membership on benefits of joining the group for only \$35/year. Their website is calstar.org, She can be reached at: svargas@calstar.org

Al gave us a report on his trip to Norway. \$16/gal gasoline, \$25.00 a slice pizza at the airport plus the Viking Museum and more. WE all look forward to his photos.

Dennis, WU6X gave a presentation on the Area network and logging software to be used at Field Day in Nyack. A request for a \$10 license fee was granted. There was a discussion about the GOTA station getting into the log.

Gene, KG6NYH held the drawing for prizes.

Meeting was adjourned at 2058 hours.

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50 Years Ago at SFARC

Barbeque Picnic
20th Dist. Fair Grounds
Auburn Calif.
June 18, 1961

The picnic committee composed of Lin Hunter, Frank Carmen, and Sage had met on Thursday April 20 at Frank Carmen's, May 4th at Walt Dowdy's and June 8th at Frank Carmen's and had worked out all details for the picnic.

There were 35 present at the picnic, which included members, family, and guest. The steaks were barbequed to everyone's satisfaction, thanks to the chefs, Lin and Jim. There was plenty of food for all. Frank Carmen held the drawing and prizes were one by Dick Lund, Elmo Griffith, Howard Davis and Lon Brocklehurst. The lucky ladies were Mrs. Lund and Mrs. Otow. Small gifts were distributed to all the children and men too.

Prizes were donated by the following:

Sacramento Electronic Supply - two Diagonal pliers
Sooman's Wholesale Electronics - Small chassis
Carpenter's Electronics - Surplus power supply

Four packages of meat and some coffee, which were left over, were auctioned off and \$7.70 collected.

A Heathkit tower was operated on the grounds and contact was made with WA6JIT mobiling home.

At this time we regret to hear of Mike Bowman passing away among the silent keys on June 16th. He never missed a meeting or our Sunday nets. He will be missed by all of us.

Respectfully submitted,
Sage Otow

HF Mobile Revisited

by D.Gregory, WU6X

Bug Bites

After many years (like 30?) of operating base station only, I got the bug to go mobile HF again. Mobile HF used to be very popular and an assortment of antennas could be spotted going down the highway, and especially in parking lots of local electronics stores. Back when the bands were good (and before screwdriver antennas, BTW) operating was a bit more tedious. Radios were large and antennas were tall and sometimes a little strange looking, with interchangeable resonators to allow working different bands. 40m was a favorite as you could find a QSO by starting on 7.240 (West -, Mid-, or East-Cars nets), hook-up and move off to chat with a friend, or soon-to-be new one. There was always someone around. You may remember this era better than I, most likely, as I wasn't all that active ... mostly 2m SSB with a homebrew "halo" antenna. Strange looking stuff in those days.

Radios and Antennas

Times have definitely changed, and propagation along with it ... Radios more expensive and less skip. Antennas are now tunable from "inside" the car, and sorter. I really had that bug again ... So, I bought a Yaesu FT-857D a couple years ago ... about the size of a 70's, 2m rig with all the bands (VHF and UHF included) and great power out. The intention was to go mobile HF again. I began looking at the new (and expensive) crop of antennas available. I tried my old Hustler setup with all the coils, but it just didn't seem to perform like I remembered, plus the trees are much lower than I remembered, as well ... I started shopping for screwdriver antennas.

There are several VERY good (and expensive) HF screwdriver type antennas on the market. Most are large too. I considered a movable-tap type of vertical, but didn't want to have to stop and get out to change bands. And, I'm for simplicity ... the idea of pushing a single button on the radio to "tune" the antenna appealed to me, given all the distracted driving focus these days. So, I bought the Yaesu ATAS-120A despite the 50/50 split on eHam reviews. I attributed 40% of the negative 50% to people that just didn't get that you can't hang an HF antenna off a trunk-mount bracket and expect it to work well. And, the remaining 10% from people who bought the first version (water got into it) and from newbies who expected more from less. I built a custom antenna bracket that bolted directly to the frame, and grounded everything the radio likewise. No issues so far (the "A" version fixed the water problem, I hope). The detachable control head on the 857D allowed me to put the radio under the seat and the controls up close on a "gooseneck" mount, police style (okay, old police style, maybe?).

Band Conditions and Timing

Now, the bands are certainly not as good as I remember. There are still a few "nets" around to hook-up with friends, but my problem was/is timing. My commute was early morning or late afternoon. 20m and 40m were good some mornings but not consistently. I quickly learned that you must be very patient when working HF mobile today ... When it's good it is very good, but most of the time it has me wondering why I wanted to go HF mobile again. This will get better! Of course, calling CQ on HF mobile is like fishing in the ocean ... you just never know what you will hook. One morning I had a nice, but brief QSO (another problem with mobile operation) with a station in Japan on 40m. Wow! And, another afternoon a QSO with an aeronautical station over Texas on 20m. I've had good

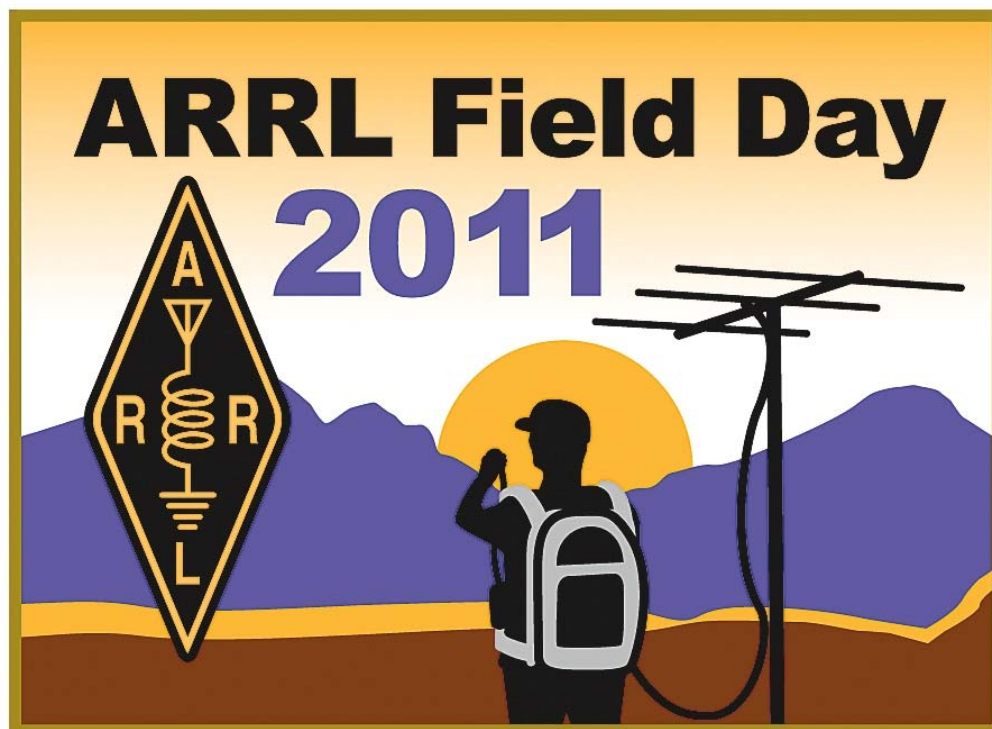
schedules with a friend in La Paz, Mexico on 20m, too. I quickly learned that you had to "pick" the right band AND the right time, to be rewarded. I also learned that you will "hear" a lot of stations, that can't hear you as they are running big power and big antennas, and a basic (100w) mobile station is a "pipsqueak" in comparison.

Commute Fun

In any case, I've been having a lot of fun and the commute has never gone more quickly. I'm working a lot of stations from Maine to Alaska, and some DX when conditions are right. I talked to a station in the Virgin Islands for the entire commute one morning. As skip gets better, I'm sure the variation in contacts will grow, too. I've learned to keep transmission short ... When your moving down the highway signals can go from S9 to S2 (in the static) very quickly. I'm also starting to recognize the same folks on, around the same time/frequency every day, almost like 2m repeater operation. There are more than a few "full time" RV'ers I run into from time-to-time as well ... Always good to hear of their travels or new destination (usually parked at the beach!). In conclusion, if you decide to give HF mobile a try, just remember ... good grounds, patience, timing, and a little luck go a long way to successful operation.

73, and I hope to work you some morning or afternoon.

Dennis -WU6X/M



www.arrl.org

Field Day 2011 - June 25-26!