SIERRA FOOTHILLS AMATEUR RADIO CLUB
P.O. Box 1005
Newcastle, CA 95658

PLACE STAMP HERE

Sierra Foothills Amateur Radio Club
2011 Membership Application

Please Print

Name: _____ Call: _____ Class: _____ e-mail: _____

Address: _____ City: _____ State: _____ Zip: _____

Associate Name: _____ Call: _____ Class: _____

Phone Number: _____ Application: (Circle One) New Renewal

Member Dues: Circle Amounts That Apply.

Applications (for new members only) received in the middle of the year will be pro rated. Contact the President or Treasurer for exact rate.

Membership: (P)	$22.00	Name Badge: (R)	$7.00
Associate: (Q)	$ 7.00	Repeater Donation: (S)	$_____
Auto Patch Donation: (T)	$_____	Newsletter Booster: (V)	$_____
Misc. Donation: (X)	$_____	Christmas Donation: (W)	$_____
		TOTAL: (Y)	**$_____**

OFFICE USE ONLY: DO NOT WRITE BELOW THIS LINE

Date: _____ Treasurer: _____ Secretary: _____ Roster: _____

Payment: _____ Check Number: _____ Cash: _____

Sierra Foothills Amateur Radio Club

SPECIAL SERVICE CLUB

SIERRA SIGNALS

http://www.sf-arc.org/ MAY 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
Bob Balthrope, KD6WTY
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, K6DGW
Sunshine: Richard WA6RWS
rkuepper@ymail.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
916-749-3032
matteod@comcast.net

WEBMASTER:
Carl A Schultz, WF6J

Calendar of Events

May 15	California Enduro Motorcycle
May 22	**North Hills ARC Swap Sacramento**
June 11-13	**June VHF QSO Party**
June 25-26	**FIELD DAY!**

In this issue

SFARC CLUB MEETING PRESENTATION

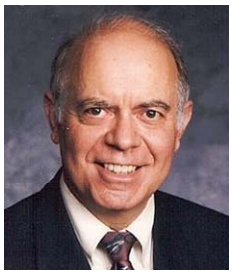
Sonja Vargas, Community Service Coordinator for "CALSTAR", CALIFORNIA SHOCK TRAUMA AIR RESCUE.

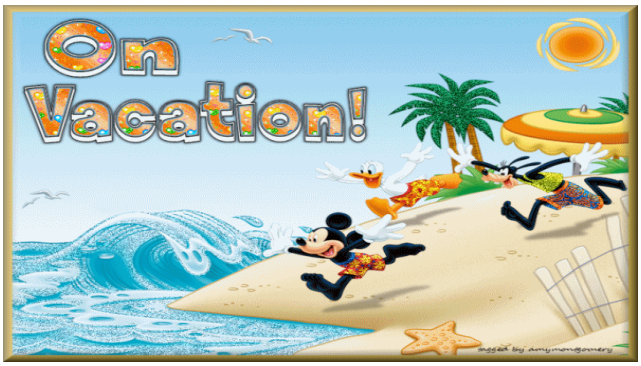
The Tech Ten will be on antennas, especially wire antennas.

Everyone is welcome, bring a friend!

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

From The Presidents Shack, Al Martin N1I2U





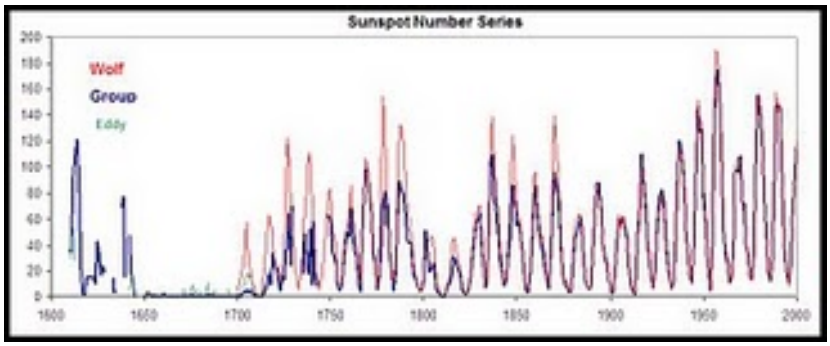
Miscellaneous Radio

"Predicting things is hard, especially if they're in the future." Y. Berra, Catcher, Philosopher

Looking back in the archives, it's been a long time since we visited sunspots and all the things that accompany them [actually, it was back as Cycle 22 was winding down]. Sunspot cycles last about 11 years, so many of today's club members may not have been licensed back then. Ham radio, at least in the HF and low VHF ranges, revolves around sunspots like politicians revolve around contributors, so let's take a look.

The surface of the sun is not really a "surface" at all since the sun is a huge ball of mainly hydrogen and helium heated to immense temperatures. It is fueled by reactions in the interior that fuse two hydrogen atoms into one helium atom. The helium atom weighs just a little less than the two hydrogen atoms together did, and that little bit of left-over mass appears as energy. Einstein said: "$E=mc^2$" where ***m*** is the left-over mass, and ***c*** is the velocity of light. ***c*** is a very big number, and much bigger yet when we square it, so that little bit of mass becomes a huge amount of energy [heat]. The "surface" we can see, the photosphere, is a raging sea of these atoms and it is hot enough [~5,800 K] to strip off the electrons making charged ions. As a result, it is an electrical conductor. Like the oceans on Earth, this plasma moves in great currents, over the surface, and vertically into and out from the core. To keep the perspective, over 99% of all the mass in the entire solar system is in the sun

The sun has a magnetic field much stronger than that on Earth and since the sun is a big gas bag, it doesn't rotate as a rigid ball like the earth, the equatorial region rotates faster than the high latitude regions. As a result, the magnetic flux gets twisted into knots internally, and eventually the knots rise to the "surface" where they appear as sunspots. Since they reduce the energy flow outward, they are cooler [~4,500 K, still really hot], and appear dark against the bright background.



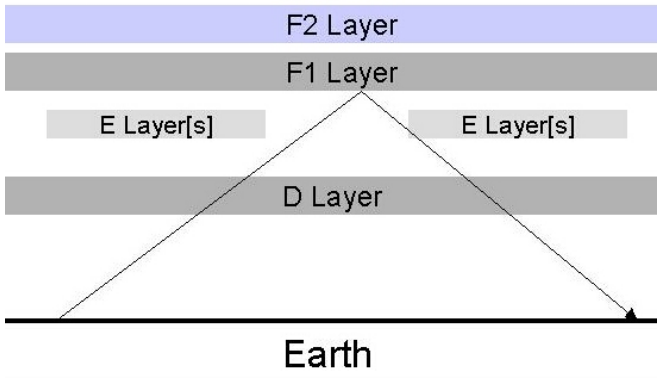
We've been observing and counting sunspots since the 17th century, and very early on discovered that their numbers seem to rise and fall in a more or less predictable cycle lasting about 11 years from one minimum to the next.

The graph is sunspot numbers counted by two different people. Note that data before 1650 are somewhat sparse. Note also that between roughly 1650 and early 1700, the number was very low, often zero. This is known as the "Maunder Minimum," and its cause is not known. It did coincide with the so called "Little Ice Age" in Europe, no

one knows if that means anything or not, but it lasted some 70 years and would have been a really frustrating time for DX'ing, had that been invented then. There's a shorter, less pronounced low period in the first half of the 19th century known as the "Dalton Minimum." Finally, note the big peak around 1961-1962. This is the fabled Cycle 19, when 10 meters was open 24/7, 6 meters was open anytime the sun was up, and 10 watts to the window screen would work the world. The length, minimum to minimum, of any given cycle varies, as we all know from Cycle 24's delayed start, but over the long haul, it's around 10.8 years.

So what does this all mean for hams? Well, in two words … a lot. When the sun is spotty, it becomes more active in the radio spectrum. For a long time now, we've been measuring the solar radio flux at 10.7 cm [about 3 GHz]. It roughly follows the sunspot count, and is called the Solar Flux Index. It ranges from around 65 at minimums to close to 300 or so in very intense cycles. Lately, it's been running between 100 and 150 most of the time. When the SFI is high, the ionosphere becomes more highly ionized and reflects our signals back to earth at higher and higher frequencies. So, "High SFI Is Good."

Now, the ionosphere is really divided into layers. The outermost is the F-Layer. It splits into the F1 and F2 layers in daylight, and merges back to a single layer at night. It ranges from around 200 to perhaps 275 km high and because it is very tenuous, free electrons can exist for an appreciable time before recombining. This free charge reflects radio waves, and because of its height, it is the F-layer[s] that is responsible for our long range DX.



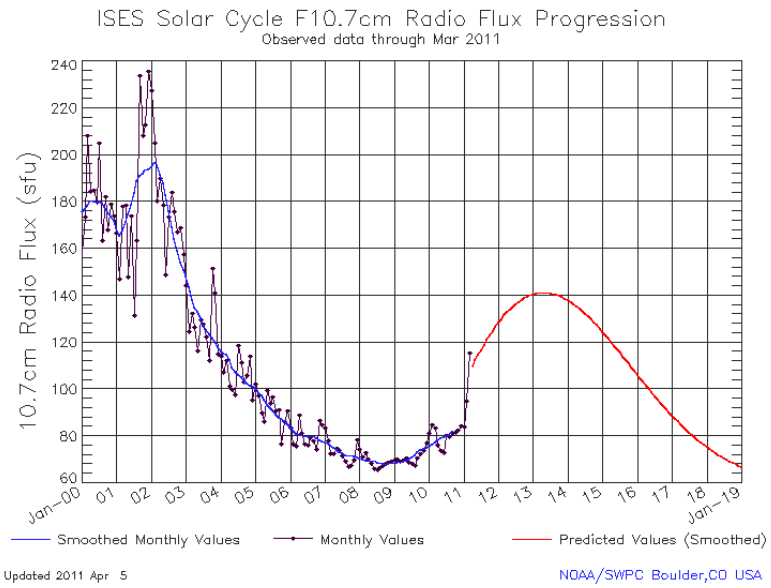
Skipping down to the D-layer, it ranges from about 60 to 100 km in height where the atmosphere is much denser and free electrons don't last very long before recombining. This prevents the D-Layer from reflecting radio waves, and in fact, makes it a good absorber of them, with absorption increasing as you go lower in frequency. Because the free electrons are so short lived, the D-Layer dissipates as soon as the sun goes down, which is why 160, 80, and 40 meters come alive at night but are pretty dead during the day, good only for very short range ground wave communications. 30 meters is only marginally absorbed, and 20 meters and higher frequencies experience little absorption which is why they are daytime bands … if there is a strong enough F-layer to reflect the waves back to earth.

What about the E-Layer? Well its there, caused by very soft X-rays and ultraviolet radiation from the sun. It is mildly absorptive and not too strong so it's a less than great reflector, and it disappears quickly as soon as the sun sets. There are times when small patches in the E-Layer can become highly ionized. We call this Sporadic-E, and it is usually a summertime thing. These patches can be ionized strongly enough to reflect signals up to 200 MHz at times, and most long distance contacts on 6 meters in the summer are via Es propagation. It isn't confined to VHF, however. I check into the Elecraft CW Net on Sundays on 14.050 MHz. The NCS is Kevin, KD5ONS, near Astoria OR. In the summer, he'll usually run around S7-8. In the winter, he's unreadable. That's Es.

But wait! There's more! The Sun is constantly streaming high speed charged particles at us -- it's called the solar wind. When they encounter the Earth's magnetic field, they are deflected if the vertical component of that field points north. Sometimes it points south, and then they fall into the ionosphere and create auroras. Every now and then the sun will belch forth great gobs of sun poop … billions of tons of it. When that hits our magnetic field, it distorts it seriously, and can create surges in long distance power lines. This happened in 1965 and again in 2003 affecting much of the Northeast and parts of Canada.

There are two indexes that measure the amount of disturbance in the Earths magnetic field, the A-index and K-index. They are related in a somewhat complex manner, and A can range from zero to fairly high numbers, I've seen it at 45. K ranges from 0 to 9, In general, low K and A are good for radio.

Finally, really active sunspots can suddenly create a barrage of X-rays which can dissipate the F-layers almost instantly. Several years ago, I was working the ARRL November Sweepstakes CW contest at Jim's, WX6V, on Sunday AM. Suddenly [like in the space of 60 seconds], all the signals on 20 meters disappeared and there was nothing but a hiss. I checked 15 meters and it was dead with the same hiss, as was 40. I then went outside and checked if the antennas were still up. ☺ This persisted for about 30 minutes, when the signals slowly began to reappear. It turned out that we had experienced the largest X-Ray flare ever recorded.



So, we're heading into Cycle 24. What can we expect? Here's what NOAA says.

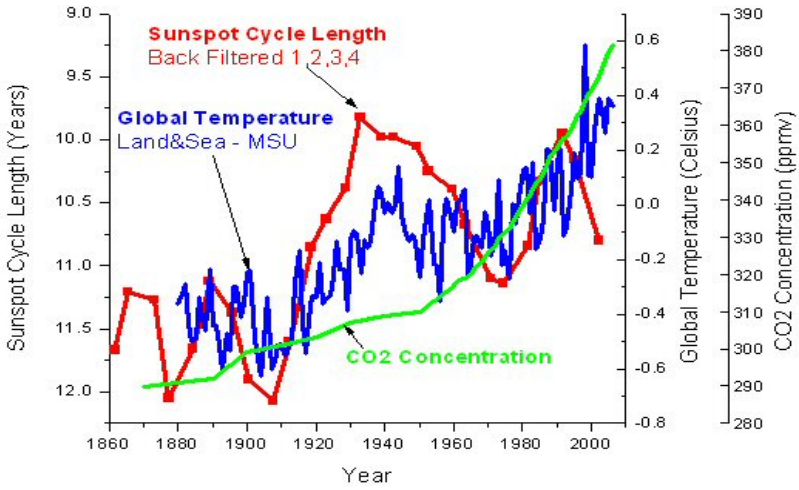
The jagged line is actual history, and the blue line is a running average of that history. The peak around 2002 was the Cycle 23 maximum. The red line is their prediction for Cycle 24, somewhat disappointing, no?

However, remembering the wisdom of Yogi in the sub-title of this column, we've already seen SFI peaks over 150 and the cycle has just started. Nor is their prediction cast in stone. They update it regularly [every week or so], so there's not much reason to lose any sleep over it.

As I write this [Fri evening, 29 Apr], the numbers are: SFI=110, A=1, K=1, and the smoothed sunspot number is 70. 20 meters has remained open to some part of the world nearly 24/7 most of this last winter, and 15 and 10 have seen many daytime openings. All is not lost.

Finally, the 11-year sunspot cycle is actually a half-cycle. The full cycle takes about 22 years. Sunspots appear in pairs, one ahead of the other as the sun rotates. In the first 11-yr half-cycle, the magnetic fields of all spots will have one polarity … say the leading spot is vertical up and the trailing spot is vertical down. In the next 11-yr half-cycle, that pattern will be reversed. This allows us to determine if new spots are part of the old cycle or the new cycle. Again, while there are competing theories, no one really knows why this happens. For that matter, we really don't know why a lot of the sun's activity happens. We just know what some, but by no means all of it does here on Earth.

For example, “Do sunspots affect the weather on Earth's surface?” That the so called Little Ice Age coincided with the Maunder Minimum looks suspicious. Or consider the graph on the right which plots global temperature, CO_2 concentration, and sunspot cycle length over time. Again, it looks suspicious that cycle length determines global temperature.



Alas, the suspicions are unfounded in both cases. When two different variables appear to move together, we say they are either positively or negatively correlated. That, however, does not suggest that one causes the other.

A famous example comes from Copenhagen where the human birth rate and the stork population are very highly correlated. Lots of storks, lots of human babies. They just happen to be two variables [measurements] that for some reason tend to vary together. We all know where babies come from, and it isn't storks. Fortunately we do have some understanding of how the sun and its regular life affect radio propagation. Most of the rest is still up for grabs.

73,

Fred K6DGW

WHAT TO DO NOW? HAM SWAPS!

By WF6J

Not that long ago you could spend a day visiting electronics, surplus and radio stores. Go to the Bay Area and you could go window shopping at places for days. It's not that way anymore.

With new Hams buying radios and antennas on-line, the good old days of shopping for components, surplus and visiting our local Ham stores has almost vanished.

I moved here from the Bay Area but down there you can shop: HRO, HSC, Weird Stuff, Alltronics, Jameco, Fry's and… well that's about it. Gone are the days of Quemet and several other great places. The times they are a changing!

Sacramento once had: The Radio Place, Mike's Electronics, The Radio Supply Company, HFE, Marvacs, plus some other great surplus stores. Today we can go to: Fry's, Metro Electronics, Batteries Plus, Ali's Surplus Stuff, Blue Collar Supply and… that's about it. Blue Collar and some other "metals" places carry the aluminum for making antennas. Coax and connectors? Only at Metro Electronics now.

Guess if you want to make anything electronic, it's new stuff, on-line purchase, or the local Hamswaps. And speaking of Hamswaps, a few are still going strong, yet some like "Livermore" are no more. The Foothill Swap has only one event at Foothill College, most are held monthly at De Anza College in Cupertino and are mostly computer gear.

So it is time to take stock of what we have left, get out there and support the events so they don't become casualties of the changing world. Let's talk Hamswaps!

The year starts off with some smaller event linked swaps, but the first one is Valley Of the Moon ARC's Sonoma event. This year on Saturday April 30th. They have a pancake breakfast, VE Exams, a Fox Hunt, demos and a good swap.

Next is the swap at EMCOMMWEST May 6, 7 & 8 in Reno. They also feature vendors with demo gear. May 22nd is the North Hills Radio Club's event at Natomas High School. Exit I 80 at Truxel, go south and you can

see the school on your left. Always a great event socially, good food, and there is always some great gear for sale.

After the hot summer Labor Day weekend sees the SWOT gang assembled at W6OMF's QTH in Vacaville for "grip n grin" as Larry would say. While oriented towards weak signal VHF and up, you can find HF gear and more, but don't think of computers or other such non-Ham gear or you will be turned away.

September 10th is the Lincoln Swap put on by the West Placer ARC, Yolo ARC and River City ARCS. The "young" swap, but a great showing of Ham Gear and such.

There are the "Conventions" SEA-PAC up in Seaside Oregon June 3-5, plus PACIFICON 2011 October 14-16 at the Marriott Santa Clara. Hey I might have missed a few. (don't forget the monthly swaps in the Bay Area) but you've got the idea, get out and support Ham Radio!

If you have any other events to list, we'd like to know about them. Please email Matthew or myself with the info.

Meanwhile you can find me roaming the isles at Fry's, Metro, Blue Collar, Ali's Surplus Stuff and anyplace that might have some old gear or parts for sale.

SFARC Satellite Report

By Greg Dolkas, KO6TH

So, in case you're not paying attention, or paying too much attention to other things, some news. ARISSat-1 was a no-show at it's much-advertised Public Relations event in mid-April. As Earthlings celebrated the 50th anniversary of Man's first space flight, nothing was heard from the satellite by any of the many Hams listening for it. Well, these things happen, I suppose. It is, after all, Rocket Science.

Information is a bit lacking as yet on just went wrong, but the AMSAT team did receive some preliminary information that we can use to eliminate some of the speculation that is rampant after these sorts of events.

First of all, was the satellite damaged during launch? No, the satellite was actually tested back a few months ago by powering it up *inside* the International Space Station. To avoid having its transmitters spray RF into every nook and cranny of the orbiting laboratory, they disconnected its antennas and cabled them to a bulkhead connector that leads to an antenna on the outside of the Station. The satellite has both solar and battery power, and for protection purposes the solar cells remained covered for the test. They wouldn't do much inside the Station, anyway, so the test was done on battery power alone. The satellite performed as expected during the test (I received it here at KO6TH with a good strong signal).

Several theories center around the satellite's setup and operation, including having the antenna attached to the wrong connector. Possible, they say, but somewhat unlikely since they did it right with the earlier test. Mis-operation of the power switches? Apparently, this would have been indicated by the satellite's panel lamps. So, also unlikely as the cause.

Perhaps a bad battery? The battery used in the satellite is the same as used in the Russian space suits. ARISSat-1 is, in fact, what became of the follow-on to SuitSat, which was a small satellite that was built into an old Russian space suit containing an old but presumably still serviceable battery. So, was the ARISSat-1

battery bad? No, the Russians confirmed; since ARISSAT-1 did not depend on an expired space suit, the satellite's battery was in fact a brand new unit, installed prior to launch from the ground.

Ah, but did the battery have enough charge? According to the preliminary information, the batteries are rechargeable, but these are Silver-Zinc batteries and are only rated for 5 charge cycles. The team is reported to have decided not to "use up" one of these precious cycles with another charge, preferring to leave the battery in better shape for its on-orbit mission later. But the battery is supposed to have enough charge for over 100 hours of satellite operation, so it should have had ample charge left over from the earlier test. Apparently not.

So, for whatever reason, the best guess is that the satellite simply suffered from a discharged battery. Now what? Well, they still do have the means to recharge the battery on board the ISS, and presumably will do so before "launching" the satellite during a space walk in July. As for contingency plans, there are few. While the satellite can run in a low-power mode on solar power alone, the safety interlocks that prevent it being turned on prior to launch require the battery to be functional; it's a mission-critical component for the first 15 minutes of flight. It is not known if there are spare batteries on board the ISS, or if there is sufficient space and weight allotment available to return the satellite to Earth for repair and a second try at deployment later.

The AMSAT team and NASA are waiting for a more fully detailed report on the mis-adventure of ARISSat-1. Until then, and hopefully before the July spacewalk, we will have to hope the new little satellite is safe and that recharging the battery will be completely recover the satellite.

73, Greg KO6TH

50 Years Ago at SFARC

Home of Mike Bowman
Auburn, Calif.
May 10, 1961

The meeting was called to order at 8:15 pm by Pres. Lin Hunter. Minutes of previous meeting and treasurers' report were read and approved.

The main business was the preparation of our coming barbeque picnic on Sunday, June 11, 5:30 pm. *(Postponed to June 18th)*

The following persons were appointed to take care of each division:

Jim Carmen and Walt Dowdy – Steaks & Soda
Lin Hunter – Paper Plates, Cups & Charcoal
Frank Carmen – Prizes
Sage Otow – Ice Cream

The bread, salad, coffee, potato chips and butter were to be brought by the members.

Bob Davis motioned that we spend up to $15.00 for prizes; seconded by Dick Lund, and passed unanimously.

Meeting adjourned at 9:45 and refreshments served.

Respectfully submitted,
Sage Otow

ARRL VEC
AMATEUR RADIO VOLUNTEER EXAMINER

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

Mark Your Calendar

GOTA
GET ON THE AIR
FIELD DAY

June 25, 26, 2011

California Motorcycle Enduro Needs Operators

The California Enduro Motorcycle Assn (CERA) is anticipating starting the Georgetown enduro event on May 15th and has asked for club support.

Basically we are asked to provide radio support for 4 stations in the Tahoe National Forest. The event consists of up to 300 motorcycles riding marked routes and covering up to 60 or more miles for the event.

We use 2 meters simplex except during the drive to Georgetown. HTs don't usually do it so you will need a mobile. You need to bring your own food, water and any other creature comforts you want or need. The club has in the past received some generous donations for our support so any one who comes out will be supporting the club's treasury if we do get a donation.

Any questions can be directed to me: kg6lsb@arrl.net

George KG6LSB

SFARC Meeting Minutes

BOARD OF DIRECTORS MEETING MINUTES

8 April, 2011

Board meeting at the Round Table Pizza in the Auburn Town Center was cancelled by VP Baker for lack of quorum.

Richard WA6RWS, acting secretary

GENERAL MEETING MINUTES

8 April 2011

General meeting commenced at 1930 hours at the Placer County Library in Auburn. Present were Officers Chuck Baker, AE6LR, VP and Director Jim Griffith, KI6AZH, Richard Kuepper, WA6RWS, acting secretary, and Dave Hund, N6SHD Field Day Chairman. Al Martin, NI2U, President; Bob Balthrope, KD6WTY, Treasurer and Director Mary Anne Balthrope, KE6EST were excused. Chuck led everyone with the Pledge of Allegiance. Officers, Directors, members and guests were introduced.

No Treasurer's report.

VE report – Chuck indicated that Dave Albright, NO6NO was willing to take over the VE test reporting. He will be out of town for several months during the summer. Thanks to Dave for stepping up.
Satellite report – None

Repeater - Richard indicated repeater is working well.

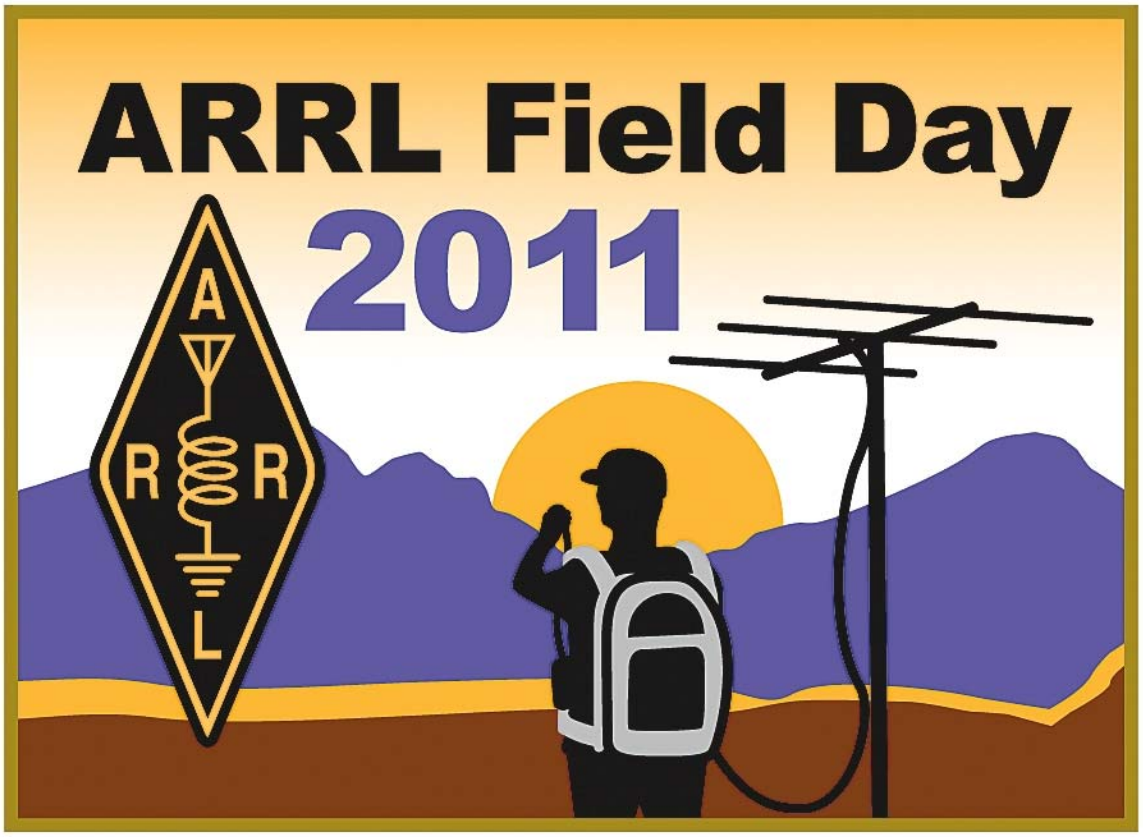
Sunshine report – Richard, WA6RWS nothing to report.

Raffle – Gene, KG6NYH talked about all the goodies including of course an atomic clock.
Tech-Ten was presented by Carl, WF6J, "Building a 2 meter yagi for less than 10 bucks". The sample he demonstrated was raffled off and the lucky winner got a steal deal. Thanks to Carl.

Old Business - Still in need of a secretary.

The Presentation was given by Marty, W6TOC on ARES role in the County's 2010 MCI Exercise. Great information from Marty and good comments from experts in the group. The raffle was held and meeting adjourned at 2100 hrs.

Richard WA6RWS, acting secretary



www.arrl.org

Field Day 2011 - June 25-26!