http://www.sf-arc.org/ SEPTEMBER 2009 PO BOX 1005. NEWCASTLE. CA

At the key of SFARC

S F A R C

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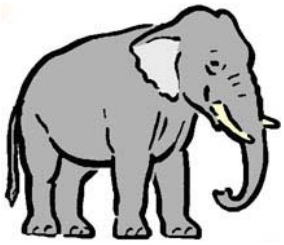
Satellites: Greg, KO6TH
History: Gary, KQ6RT
Misc Radio: Fred, K6DGW

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, K6ARR/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

Calendar of Events

9/12/09 — 2nd Annual Sacramento Valley Hamfest, Lincoln, CA. Go to http://www.svhamfest.org for more information and flyer.



10/9/09 — **SFARC WHITE ELEPHANT SALE**

In this issue

September Meeting Program

The "TechTen" topic will be on making home made printed circuit boards.

The meeting presentation will be a DVD on Simulated Emergency Testing.

Bring a friend, visitors welcome!
See you all there!

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

Jim Carman – K6ARR

50 Years with SFARC

By Fred K6DGW

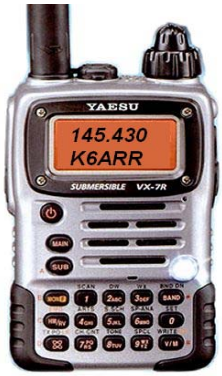
No, this isn't an SK announcement for Jim, he's as alive and well as ever, I last spotted him a couple of weeks ago at the Sizzler in Auburn, we were coming in with my Mother-in law, he was leaving. Jim was celebrated at a recent meeting for 50 years with SFARC. He was, of course, one of the SFARC originals. Look at his call – another original – and look at mine, also an original. We were both licensed in our early teenage years in the early 50's, a time of explosive growth in ham radio, many very young, due to the new Novice license … 1 year, non-renewable, CW only [except for 2m AM], 75 watts maximum, and crystal controlled transmitters.

I first met Jim in the earlier 70's. His repeater then was on 146.76 [146.16 input] and PL had not really made it into the amateur ranks. I had an ancient AN/FRC-27 in the garage with the control box in my shack, and one evening, Jim invited me up to Auburn to talk about re-establishing the SFARC after a period of dormancy. We met at the Fairgrounds, and the group decided to start the club up again. My guess is this might have been 1974 or close.

We moved to Auburn on Pearl Harbor Day, 1976, and I began attending the meetings. They have moved around a lot over the years, but throughout that, Jim continued to maintain and operate the repeater. When the 145 MHz segment opened to repeaters, he moved it to 145.43 to escape some QRM on 16/76. 94.8 PL came along later, which was necessary but required quite a bit of adjustment for many, few rigs and HT's of the day supported any PL at all. I recall installing a Comspec64 in one of John Tiernan's radios. When PL moved to 162.2, it wasn't a big deal except for getting the word out, radios had changed dramatically then, all we had to do was dial it in on the menu.

Throughout all this, Jim kept the "Auburn Repeater" on the air, and made it available to the club. He and some others put an autopatch on it [prior to the cell phone era], and the club established a repeater fund for voluntary contributions.

I'm a member of the No. Cal. Cactus Radio Assn. which runs Bald Mt and Squaw Peak for the endurance events each year. We have a number of members, they all pay their dues, but what isn't understood by many is that someone needs to maintain the equipment on the mountain tops. For Bald and Squaw, that's been Jim, WA6OOU, and me. It's hard, it takes time and effort, lots of planning, and not an insignificant amount of money to keep a repeater on the air. Over all these years, K6ARR has been the guy, most often the only guy, who kept the "Auburn Repeater" going. We've all used the repeater often and still do. I've used it from Vacaville, and well up I-80. Jim's system has supported innumerable Sierra events, far beyond the "Famous Two." It has participated in life-and-death rescues from the mountains we live in and the rivers that run through them.



Let's not ever forget what one ham, whose call sign predates mine [I was 13 in 1953 when my first license came in the mail], and who has stuck around and provided something we all enjoy, has done. I won't.

Thanks Jim! We've lived here for coming up on 33 years, and **"K6ARR"** shows up on both of my radios when I get to memory channel 1, and it always will.

73, Fred K6DGW

Miscellaneous Radio

By Fred K6DGW

More History – The Z-Match

I promised a return to radio this month, and so it shall be. Not everything in the ham radio world is new. Nor does all the new stuff always work better than the old stuff, the new often just has more "features." My Elecraft K3 is certainly a number of cuts above the Hallicrafters SX-28A and homebrew transmitter I used in 1955, but here's a nifty little thing that really hasn't changed since it was first conceived. And thanks to my good firefighter friend Dave, W8FGU in Detroit, I have one. [w8fgu.home.comcast.net]

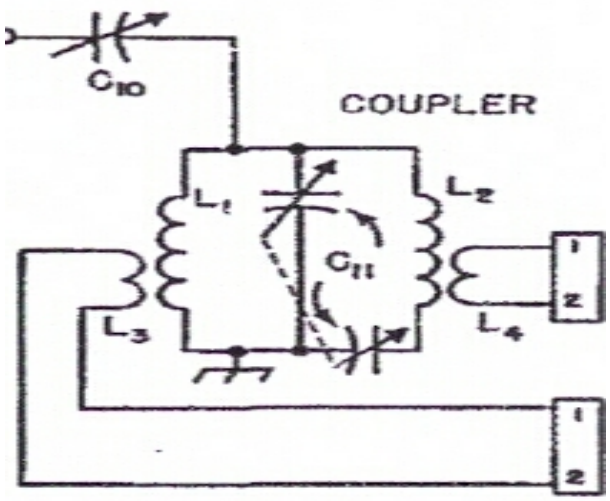
Back when transmitters were transmitters and receivers were receivers and they held down different parts of your operating table against gravity outages, your transmitter had a "tank circuit" in the power amplifier stage. I think the name derived from the analogy that it collected and stored the power produced by the power amplifier tube. It was necessary because the power amplifiers of the day ran Class C, outputting a slug of power as a pulse at the peak of each RF sine wave. It was typically a parallel resonant circuit [a capacitor in parallel with an inductor], The pulses caused it to "ring" and complete the sine wave, much like a bell being struck. It was also an impedance matching network, matching the output impedance of the tube's plate circuit – several thousand ohms – to the much lower impedance of the transmission line.

It was common then to use plug-in coils, one set per band. To change bands, you [hopefully] shut down the transmitter power, shorted the plate caps to ground, and unplugged the inductors. You then plugged in the inductors for the new band, turned on the power, tuned up, and called CQ. They varied in size and shape. Lower power stages might use inductors wound on forms similar in size to the tubes of the day with similar pin layouts. Higher power stages might use air-wound inductors with banana pins on the support to plug them into the electronics. The venerable BC-610, a military transmitter good for several hundred watts [and way more than several hundred pounds] was an example. You will still see BC-610 plug-in tank coils at ham swaps.

This unplugging and plugging was sort of annoying, but we didn't really notice it, "That's just how it's done." Nor were they confined to the transmit side of the station, the National HRO series of receivers had plug-in coil sets to cover the entire HF range. Plug-in inductors gave way to bandswitches which selected the proper set of inductors. However, in the early 50's, the concept of a multi-band tank circuit arose. It replaced the plug-in coil drill, and would tune the entire Amateur HF range. It became popular, appearing in several radios [the Harvey Wells TBS50 "Bandmaster" which I had for quite awhile was one example], but for some reason it didn't catch on to become ubiquitous.

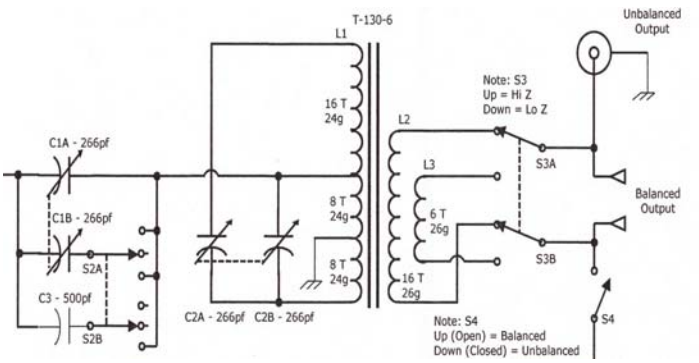
The multi-band tank circuit is absurdly simple. Basically, it's an L-network – a series capacitor followed by a parallel inductor. Theoretically, an L-network can match any impedance to any other impedance. In really bizarre cases, the values of the C and L get outrageous and sometimes you have to have a series inductor and parallel capacitor to make it work. But, L-networks are the workhorses of the matching business.

The figure is the Z-match portion from the May 1955 issue of QST [it's copyrighted by ARRL but they gave me permission to use it if I said that] from an antenna tuner article by Allen King, W1CJL. The parts I left off involved some switching and an SWR bridge. It is a multi-band tank circuit – an L-network. It will tune two ranges simultaneously, without band switching. The original circuit involved two inductors and three capacitors, two of them ganged. C_{10} is the series arm. For the lower range, L_1 and it's parallel C_{11} form the parallel resonant "tank," and C_{11}/L_2 are way off their resonant frequency and just add some parallel reactance. The situation is reversed for the high range … C_{11}/L_2 form the tank, C_{11}/L_1 are way off resonance and just look like some additional reactance. The other half of C_{11} in series with L_2 reduces the net



capacitance across L_2 for the higher frequency range.

In the Z-Match, C_{11} isn't tuned for resonance, it is tuned so that the parallel circuit with L_1 and L_2 exhibits the right amount of inductive reactance (i.e. the combination just looks like an inductor). And, note the date … certainly not new, I was about to become a 15 year-old when it was published and you all know how long I've been around ☺ It used air-wound inductors, and was built for a 250 watt or so transmitter. The output's were taken by link coils around the main coils, a very common practice in that time. Two inductors in parallel can be configured as one inductor, with a tap where only part of the inductor is in use, depending on the band you're operating on, and the circuit morphed to that as time went on.



The Z-Match that Dave built for me is scaled for QRP operation, and it uses the tapped inductor wound on a toroid core. The circuit looks a little "busy" but most of that is just the switching. It has the series capacitor (C_1 and C_3), the two parallel tank circuits, and the two link outputs. Note that C_{2A} is across the entire inductor and C_{2B} is across only the bottom half. One section of C_1 is in the circuit all the time. The other section can be switched in and out. The fixed capacitor, C_3, can be switched in when needed. There is an absorbative SWR bridge included with operates an LED tuning indicator too. I cropped it out of the schematic to make the drawing fit better in the two column format.

The box is 4x4x2, weighs about 9oz, and fits nicely into the nylon bag I use to carry my KX1 around. Using it is a snap. It has BNC connectors for input and output plus two binding posts for a balanced output. Grounding one of the binding posts with S4 allows you to end feed a random wire with a counterpoise wire attached to the ground. The two link windings on the toroid let you feed coax [50Ω] or higher impedance ladder line. The SWR bridge can be switched in and out of the circuit and it is normally bypassed during operation. To adjust it, you just select "TUNE," feed power and tune the two capacitors alternately until the SWR LED goes out, and then select "OPERATE." Depending on the band you are on, you use the "C" switch to get the right capacitor range, and depending on the antenna you're feeding, you select either high or low impedance output with the "Z" switch. That's

it! I used it with my Elecraft K2 in the Flight of the Bumblebees QRP contest the end of last month, and with my KX1 in the Spartan Sprints the first Monday of each month.

I had the opportunity to borrow an HP power meter that is very accurate and can be configured to show very small differences. My KX1 and K2 have the internal automatic antenna tuners … also L-networks. It appears that Dave's Z-match has about 0.5 dB less loss than the ATU's – nowhere near significant in normal operation, but it's refreshing to know it's not a power sink.

My Z-match from Dave looks brand new because it is, and he is a master builder, both electrically and mechanically. But lift the hood, and the "engine" is a design that has been around for many decades and is as useful today as it was when it was invented. Yet more history from "The Historical Guy."

Mark your calendars, the California QSO Party is coming up on 3-4 Oct. This is our contest, we need as many stations on, 160m – 2m as we can get, and on HF, you will be DX for all those others looking to work all 58 counties, post the highest score, and get a bottle of Jeff, WK6I's wine from his Twisted Oak Winery in Murphy's. You don't have to spend a lot of money [none actually], you don't have to get on a smelly boat and go to some faraway place to be sought after, this is your weekend to be wanted!

73,

Fred K6DGW

SFARC Membership Meeting

Minutes of the General Membership Meeting
August 14, 2009

The meeting was called to order at 7:32 PM by President Norm Medland, W6AFR. Flag salute was followed by the introduction of the officers and members.

Treasurer Leslie, K7NYE, reported that the club had a balance of $1435.35. The PG&E bill and the phone bill were holding steady. A fee of $70 was paid for the use of the park for the club picnic, to be held at Ashford Park in Auburn on August 22, 2009.

A VE report was given by Casey, W7IB, indicating that the sessions held at the Raley's on Auburn-Folsom and Douglas were drawing test takers on a continual basis with a very good success rate.

Gene, KG6NYH, previewed the drawing which featured the ever popular "atomic clock" among the items. Richard, WA6RWS, advised that he expected to give a complete update on the backup repeater and have everything up and running "hopefully" by October.

Chuck, KG6FFK, updated the club on the status of ARES. A reminder was made that the club breakfast was held the last Saturday of the month at Susie's located just off the 80 freeway at Cirby and Riverside.

Jim Carman, K6ARR was presented with an engraved plaque for his 50 years plus of dedicated service to the club including maintaining the repeater for a lot of that time.

Mary Anne, KE6EST, summarized some of the logistics and work involved for the Tevis Cup Race, mainly focusing on the substantial undertaking to provide communications. They use at least 7 repeaters and 90 radios with challenges coming from the difficult access when riders are down in many canyons along the trail.

The presentation was a video tour of the Ameritron factory showing many of their products being built and showing the components that go into them.

The drawing was held and the meeting adjourned at 9:15 PM.

Respectfully submitted,
Wayne Stilwell, W6DT Secretary

ARRL VEC
AMATEUR RADIO VOLUNTEER EXAMINER

Local ARRL Exam Sessions
Courtesy of the ARRL

05-Sep-2009
Sponsor: UNSPONSORED
Time: 8:00AM (Walk-ins allowed)
Contact: LARRY R HODGE
(916)361-2476
Email: LARRYHODGE2000@COMCAST.NET
VEC: ARRL/VEC
Location: RALEY'S COMMUNITY EVENT CENTER
6845 DOUGLAS BLVD
GRANITE BAY, CA 95746

19-Sep-2009
Sponsor: RIVER CITY ARCS
Time: 7:30 AM (Walk-ins allowed)
Contact: KENNETH M HALL
(916)492-6115
Email: WO6J@ARRL.NET
VEC: ARRL/VEC
Location: CARMICHAEL ELKS LODGE-USE EAST ENTRANCE
5631 CYPRESS AVE
CARMICHAEL, CA 95608

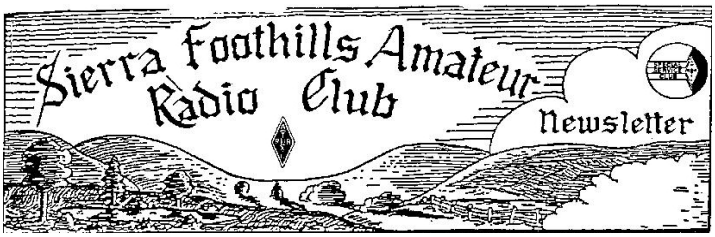
03-Oct-2009
Sponsor: UNSPONSORED
Time: 8:00AM (Walk-ins allowed)
Contact: LARRY R HODGE
(916)361-2476
Email: LARRYHODGE2000@COMCAST.NET
VEC: ARRL/VEC
Location: RALEY'S COMMUNITY EVENT CENTER
6845 DOUGLAS BLVD
GRANITE BAY, CA 95746

17-Oct-2009
Sponsor: RIVER CITY ARCS
Time: 7:30 AM (Walk-ins allowed)
Contact: KENNETH M HALL
(916)492-6115
Email: WO6J@ARRL.NET
VEC: ARRL/VEC
Location: CARMICHAEL ELKS LODGE-USE EAST ENTRANCE
5631 CYPRESS AVE
CARMICHAEL, CA 95608

2009 SFARC PICNIC

Good food and good people were the reports I received about the 2009 SFARC Picnic held at Ashford Park in Auburn, CA. Approximately 40 people attended with family and a good time was had by all!

Thanks to Al Martin, NI2U for sending the photographs for the collage.



Fifty Years Ago at SFARC
Meeting of August 29, 1959

This meeting was held during the Bar-B-Q at the recreation park.

Lucius Waterman resigned as treasurer. Walt Dowdy unanimously elected as treasurer.

Guest were Ken Weger, WA6EMU and Jim Hills, W6VFY of Meadow Vista. Ken lives in Auburn.

Moved, seconded and passed that Bob Davis be program chairman.

Present at Bar-B-Q:
Betty Lund
Gus Gerke
Howard Davis
Billy Dowdy
June Dowdy
Walter Dowdy
Terry Davis
Carl Rolufs
Ken Weger
Jim Hills
Arlene Murch
Myerl Carman
Mrs. Carman
James Carman
Bob Davis
W.C. Bauman
Luke Waterman
Bob Hicks
Carl Rolufs

And others!

W.G. Dowdy, Sec

E-MAIL TO THE EDITOR

Hi Matt:
Don't know if we do product alerts, but thought it might be a handy department in the bulletin. Brought on by my antenna analyzer not powering up. I first checked the batteries although they've been in use only six months or so and found that they were not only dead, but two of them leaking in my MFJ 259B Analyzer.

Brand is Rayovac. Cleaned up the soiled contacts with alcohol and put in Copper Top batteries. I would avoid this brand (Rayovac) for sensitive and expensive equipment.

Norm, W6AFR

Dear Norm;

I spend between $500 and $800 per year on batteries in my business. It's been my experience that all batteries will leak over time. However, certain factors seem speed up the process. Heat is usually the biggest culprit. Storing your flashlights under the seat of your car, or in direct sunlight will cause the batteries to leak. The reason they leak is because they are filled with a chemical paste of which the liquid portion is composed of a base called Potassium Hydroxide. When the batteries get hot, the paste inside expands, and forces chemicals out of the seals in the bottom and top of the battery. When the Potassium Hydroxide makes contact with the spring and terminal in your radio gear, it produces a blue-green powder as it corrodes the terminals away. Cleaning up this powder is easy. The best method I have found is Vinegar.

The best way to avoid future leaks is to keep the equipment in a relatively cool area. Also, avoid really cheap no-name batteries. You don't have to pay for the high-dollar Energizers or anything like that, but avoid things like "Super Cell" or "Power Max", obvious knock-offs at the 99 cent store. Also, don't mix battery types. There are Standard batteries, and alkaline batteries. If you mix standard with alkaline, two things can happen. The alkaline batteries are slightly more powerful, and will cause the regular batteries to heat up more in operation, causing them to leak faster.

Regardless of the brand you buy, as I said above, all batteries will leak eventually, so if you don't use the your MFJ Antenna analyzer for extended periods of 3 months or more, remove the batteries, or change them out every couple months. What I do is buy a package of batteries and leave it next to the equipment and not install them until I need the equipment.

Also, with all due respect to vendors, I never buy RAYO VAC.

Matthew Diridoni, KC6RUO
Newsletter Editor

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

PLACE
STAMP
HERE

SIERRA FOOTHILLS AMATEUR RADIO CLUB
2009 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: _____