Smoke Signals

Newsletter of Fullerton Radio Club

June 2024

President's Column

Radio 101: Lecture and Lab

If you have ever taken a college-level science or engineering course, you are no doubt familiar with such courses consisting of lecture and lab components. The premise of teaching such courses in this manner is that while there is a theoretical or knowledge-based component to the subject you are learning, there must also be an application-based, practical, or hands-on component. The lecture portion of the course helps you *acquire* the knowledge while the laboratory portion gives you practice in *applying* that knowledge. It is not really useful just to *know* something unless you can also *do* something with that knowledge.

In order to earn your amateur radio license, you had to pass a test demonstrating your knowledge of rules as well as basic radio and electronics theory. The preparation that you did in order to pass the test is intended to be the equivalent of taking the lecture component of a course. That it is quicker to simply study the questions and answers than it is to gain true understanding is a discussion for another time. Even if your method of studying gave you a deep understanding of the concepts (good work), you still have only taken the lecture portion of "Radio 101."

I think it's safe for me to assume the reason you got licensed is to be able to skillfully communicate using radio equipment. Somehow it is now necessary to complete the laboratory component of Radio 101.

A surprisingly large number of people study and pass the amateur radio licensing exams, acquire their license(s) but then *never* actually get on the air. This fact really shouldn't be surprising as we are offering new licensees the lecture course but then expecting them to figure out the laboratory portion of Radio 101 on their own.

My goal over the next few months, with your help and suggestions, is to develop some group and individual hands-on activities that will attempt to provide the laboratory component for our Radio 101 class. I don't yet know what this will look like, but I'm thinking that we should budget a couple of hours a month, perhaps on a Saturday morning, to meet in person and work on various radio skills. We might follow up with lunch, because food is never a bad idea! Although my desire to do this has been largely prompted by our recent new club members, I think these activities will also be fun for our experienced hams, both by helping the newer members and (hopefully) by learning (or re-learning) a few things.

Stay tuned.

Thank you Paul Broden

For the past two and a half years, Paul Broden K6MHD has served as our club's Secretary - taking minutes at our monthly Board meetings. You will also recall that Paul published this newsletter for well over twenty years.

This month Paul decided he needed to step down as secretary so that he can deal with some health issues.

From all of us: Thank You Paul. We will look forward to seeing you on Zoom when you are up to it.

FRC June 2024 Board Meeting Minutes

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:35 PM on Wednesday, June 5th, 2024. Additional board Members present included Secretary Paul Broden K6MHD, Members at Large Larry McDavid W6FUB and Bart Pulverman WB6WUW.

The May Board Meeting minutes were reviewed and approved.

Treasurers Report:
• Bank balance $6217.43 as of the June 4, per the treasurer.
• New deposits: Antennas in The Park donation of $70. Plus, member Robert Gimbel KG6WTQ renewal of $20, new member Jackie Alexander KN6UVK, and interest of $0.02 = $110.02

• New expenditures: Reimbursement to Bob Houghton of $126.30 for AITP food, and to Walter Clark of $84.81 also for AITP food.

• Renewals: Robert Gimble KG6WTQ

• New Members: Jackie Alexander KN6UVK
• Bob's records show 33 paid memberships and 1 life member as of 4/29/2024.

Old Business:
• Net update: 10 participants so far.

• California SOI was filed by Bob Houghton on 5/7/24 at cost of $20.

• W6ULI club license was renewed by Bob Houghton on 5/9/24 at cost of $35.

New Business:
• We need to identify a source for obtaining new club badges. Process postponed.
• An update discussion was held regarding the club's participation in field day. We will not have access to the cabin this year. Most activities will be on the hill to the north of the cabin. Potential issue: availability to restrooms!

There being no further discussion the meeting was ended at 5:55 PM.

Submitted by Secretary Paul Broden

Repairing a Dead Kenwood TH-F6A

by Larry McDavid W6FUB

I have two Kenwood TH-F6A HTs, one I bought just after the product was announced at the Dayton Hamvention (I was at that evening Kenwood meeting and joined in the standing ovation when the 220 MHz capability was announced).

My original TH-F6A continues to work well. I got a second TH-F6A from a SK friend's estate. It had not been used for over a year and appeared dead. I could not get it to start despite my best efforts, including the system resets. Rather than just throw it away, I kept it, hoping I would one day have a better idea.

Recently, a Yaesu HT with the same functional failure was restored during a club breakfast by Mike Rhey K6ANR, who just took it apart at the restaurant table; he cleaned the keypad contacts and that was sufficient to restore that Yaesu to normal operation. After we discussed this surprising result, Bob Houghton AD6QF thought this might help my failed TH-F6A and tried that same repair; that restored my HT to operation also!

The TH-F6A keypad is not a tactile switch. There are gold plated traces on the circuit board and the rubber keypad buttons are conductive, forming the keypad switch. Such "membrane" key switches have a long history of failing over time.

So, if you have some HT problem, either failing to start or some curious keypad issue, I suggest you open the HT and clean the keypad board contacts and the keypad rubber pads; use a Q-Tip and 99% isopropyl alcohol.

Opening the TH-F6A is easy: remove the two slotted nuts (see below for a tool) around the SMA connector and encoder shafts, and remove the two small cross-point screws visible when the battery is removed. These are JIS screws, not Phillips, so use the correct tool! The unit separates into two parts easily and safely, exposing the keypad contacts.

In my failed TH-F6A, neither the gold-plated traces nor the rubber keypad appeared much contaminated, but Bob's cleaning both with alcohol on a Q-Tip restored the unit to operation. I assume there was some kind of film on those keypad POWER contacts that prevented operation. In any event, the unit now continues to work normally after cleaning and reassembly.

The rubber keypad position for POWER on/off on my failed TH-F6A is damaged through long or perhaps abusive use; this HT came to me from a SK estate and must have seen hard usage as lots of case wear is visible. The keypad is now functional but the rubber is cracked at the POWER position. I have ordered a replacement, "Substitute," keypad from PacParts and will report more after it arrives. The "Substitute" keypad is branded Kenwood, so I believe Kenwood changed the part number and likely made some change to the rubber keypad since it has a new Kenwood part number.

Here is the PacParts website for many kinds of replacement parts:

https://www.pacparts.com

Here is the PacParts webpage listing for many Kenwood TH-F6A parts:

https://www.pacparts.com/model.cfm?model_id=THF6A&mfg=Kenwood&back=0&action=list_part

Here is the PacParts webpage for the replacement Kenwood TH-F6A rubber keypad:

https://www.pacparts.com/part.cfm?sku=880N96%2D6874%2D99

The PacParts website is extensive and clearly lists the many replacement parts available. Placing the order was easy and I promptly received confirming emails. Turns out, PacParts is located in my local Los Angles area but is nearly across the LA basin from me so I had the order shipped by USPS "Ground Advantage," the replacement for (no longer available) First Class Package; I received a tracking number the same day I placed the order and the tracking info shows the package was received by the post office. That's prompt service!

There is an inexpensive spanner wrench tool available to fit several sizes of slotted nuts, including the two on the TH-F6A. The tool is listed on both eBay and on Amazon but, curiously, is usually identified by a title including, "Baofeng." See the pictures of the tool. Here is a listing title you can use to search for this tool at Amazon (there are several listings at different prices):

Silver X-Key Repair Tool for BAOFENG UV-5R 888S GP338 WOUXUN HYT TYT

Portable antenna shootout?

by Bob Houghton AD6QF

If you have known me for any time, you undoubtedly know that I like operating portable with a radio that doesn't draw too much power, a battery, and an antenna that goes up quickly and doesn't take up too much room.

Over the last five years or so, I have been on a quest to find the best lightweight, easily deployable, and sensitive antenna. I'm still looking.

Here are a few of the candidates:

Buddipole: Sort of an antenna erector set but primarily designed as a horizontally polarized coil loaded dipole. The trouble is that to change bands requires moving taps on coils and making sometimes sensitive adjustments

Buddistick: Some of the Buddipole parts set up as a quarter-wave vertical.

SOTABeams Bandhopper 2: A 20 and 40 meter linked dipole, usually deployed as an inverted-V. It fits in a small stuff sack and performs well, but requires a center support and only works on two bands.

Wolf River Coil which is a vertical with a base mounted coil with a sliding tap. It works okay, but like the Buddipole, requires fiddling to tune and change bands.

Chameleon MPAS 2.0 Beautifully made (in USA) with a price to match. It has the advantage of working (with a tuner) on 80 through 6 meters. The downside is it is about 2 S-units less sensitive than my dipole. Last week someone commented that it works equally poorly on all bands. This is the antenna I use if I will be doing a lot of band hopping.

Packtenna 20 meter end fed. The entire antenna including the toroidal matching transformer and 26 gauge wire, feasily fits in a shirt pocket. It works great, but on one band. MFJ 1979

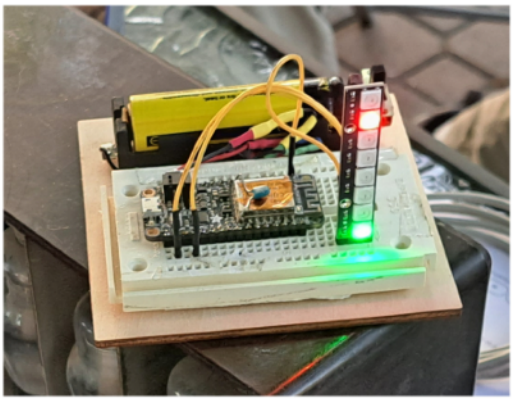
Let's set them all up at a park some future Saturday morning

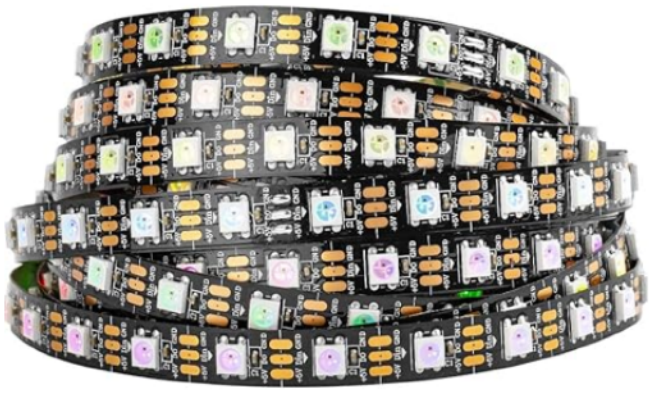
TAG Activity Report for June 2024

Dick Bremer, Larry Bennet, Larry McDavid, John Mock, Bill Webb, Dick Palmer and behind the camera Walter Clark.

Before the formal part of the meeting began there was a discussion about **Larry Bennet** and Ray Rounds using the same antenna and 80 to 440 radio. (More when I hear back from Larry.)

Bill Webb started tonight's Show and Tell with a programmable LED. You provide it the familiar 3 to 5 V and a third connector that has a digital word that describes the color. Bill showed only two LEDs. But these are so cheap the only way to buy them is by the foot. Apparently they are individually





addressable because you can make traveling color display. They are on Amazon of course, but if you don't need it the next morning . . . Bill gets his electronics from AliExpress for $2.95 instead of $28. But he had to wait a

whole month. To generate the digital word, Bill used an ESP32. Any microcontroller development board would work but bill likes to use the ESP32. Note in the picture on the left above, there is only the three wires, from the ESP32. And that's to talk to as many LEDs as you want to.

Not quite as simple as the programmable LED is the latest thing in the microcontroller development board hobby; small color displays. Yes they've had 2 cm size displays right on the ESP32, but that is really too small to be useful. The nickname for this new giant micro display is "cheap yellow display board." CYD. The cheap and yellow should be obvious here:

$10 AliExpress
$ 21 Amazon

Notice that it is part of the ESP32 development board. Bill's was in a housing he made with his 3D printer. In the photo to the right, he is showing the touch-sensitive screen. As is usual with this hobby wiring is ridiculously simple. Alas the programming (called sketches in *maker* vernacular) is where all the work is. Printed out the sketch for this project was 14 pages. Anymore, this is a hobby for programmers. The box on the left with vents is a weather station he showed to TAG last month. It communicates with the ESP32Now 2.4 GHz protocol. The wire in this case is just to eliminate the need for a battery.

Dick Palmer brought in a 1932 International Radio Corp, Kadette. There was much discussion about the circuitry. Superhet was invented long before 1932, but apparently not used here. Dick said you can tell by the size of the "gangs" of the variable capacitor. There was two but they were

the same size. The consensus was that it is a TRF receiver. Tuned Radio Frequency. For more on TRF circuitry… https://en.wikipedia.org/wiki/Tuned_radio_frequency_receiver

The story of how Dick got it was supplied by **Bob Houghton** over email. Bob is now in Grand Teton National Park.

"The Kadette and a Collins Receiver were given to the club by Don Wheeler. Don Wheeler is a resident of Fullerton who found the club (and my email address) through the FRC website. He is neither a ham nor an FRC member. Dick Palmer and I drove to Don Wheeler's house and picked up the Collins on March 26. When Bill Preston said he'd like to have the Collins, Dick Palmer held on to it until Bill Preston made a trip to California. That happened last week."

Dick still has the Kadette. I would not be surprised if Dick would be inspired to build a TRF version of a QRP transmitter using a pair of 12AU7s or something.

Larry McDavid showed a new favorite tool; a spanner wrench that has four heads, sized to fit the control nuts of many HTs to take them apart for

service. This tool is widely available on-line and at Amazon and is inexpensive.

Larry taught us the care and feeding of Andrew Heliax coax cable. It is a low-loss, semi-rigid conduit for VHF and UHF and can be safely bent over a 2-inch radius. Larry said it is meant for permanent installations and is really only barely flexible. In his case it feeds several rooftop antennas (multiple Heliax cables for GPS and two tri-band VHF/UHF vertical antennas). Heliax has a solid copper tube-like shield formed into a corrugated spiral during fabrication; the copper spiral forms a thread onto which the connector body is screwed. He showed us how to use the Andrew stripper/prep tool to simultaneously cut the jacket, shield, and center dielectric, and to chamfer the end of the solid center conductor. The large black Delrin tool he made and is used to hold the Heliax and position a saw blade to cut the coax end square.

John Mock announced that he's having a kind of midlife crisis. He is proud of his many airplane projects but they have grown bigger than he can cope with. He sold a very flyable airplane and its hanger at Perris Airport. He has yet to sell the two not so flyable ones in his backyard in Fullerton. He thinks he can sell both, but sell or not they are "going" so they won't be hanging over his head and keeping him from "starting" some radio project; a project that is complete-able. After that he's going to make room on his . . .

workbench and hamshack