Smoke Signals

Newsletter of Fullerton Radio Club

June 2025

President's Column

Between our Zoom meetings and email exchanges, I am aware that FRC members are truly "life-long learners." Just from recent recollection, here are a few of the things that are occupying our members time (and minds).

At the June "2nd Saturday" event, Larry McDavid, Ray Rounds, Harish Kumar, and yours truly held the 2nd FRC APRS workshop. A few days later, Larry, Ray, and I successfully sent several APRS messages between Fullerton and my location in Cedar Breaks National monument.

Larry McDavid and Bill Webb have been iterating the design of a 3D-printed drop-in car mount for the Kenwood TH-D75 radio which is owned by several of our members. (See article on next page.)

John Mock has been nursing an IMSAI 8080 back to life. Who remembers the movie War Games? Just be careful if you attach a modem to that thing John!

Ray Rounds, in between meetings with his ADU contractor has been experimenting with APRS.

Rich Belansky attended a conference on quantum sensors and has been checking out HamSci.com for upcoming projects.

My long-time friend and occasional FRC Zoom guest, Alex Myrman, participated in the ARRL June VHF contest and worked 121 grids - his personal best - mostly on six meters. He still needs Hawaii for WAS on six meters.

Ted Schulman, our newest member, has been "looking under the hood" to understand how some of the digital modes work, as well as teaching himself Verilog, which is a hardware description language (HDL) used to model digital systems and to program Field Programmable Gate Arrays (FPGAs). When Ted knows this stuff well enough to make it simple for the rest of us, we'll ask. No hurry!

More recently, Joe and April Moell organized a small Field Day effort at Morningside.

Ray Rounds, Rich Belansky, and Gene and Cheryl Thorpe visited the Field Day activities of the Associated Radio Amateurs of Long Beach. (see article on page 4.)

I have been traveling recently and managed to do a POTA activation at Mesa Verde National Park as well as test out numerous APRS digipeaters in Utah and Colorado.

Thanks to Ray Rounds and Dick Palmer who have served as net controls for the past two Wednesdays.

AD6QF in UT receives a packet from CA

What's Up With Security?

by Ray Rounds

Editor: Recently, Ray Rounds expressed willingness to write about some computer security topics that may be of interest to FRC members. I have asked him if this might be a regular feature in Smoke Signals, focused on basic "cyber hygiene" tips as well as information about how the security landscape is changing. Cyber hygiene is defined as: "The set of practices and procedures that individuals and organizations follow to maintain the security and health of their systems, devices, networks, and data." The goal is to protect sensitive information from cyber threats and ensure resilience against potential attacks."

Working in the banking industry for about 40 years, I still watch for improvements in my own security when it comes to my phone, laptop, and online services. I am pleased with the momentum gained by sites that have stopped using passwords and instead use more secure methods like biometrics (facial recognition, fingerprints, etc), one time passwords (codes sent by text/email or generated by authenticator apps), time sensitive login links and security keys (typically USB or NFC tokens). I lean towards authenticator tokens where possible for online services and applications. Why? The tokens used by authenticator apps change frequently and biometrics are more permanent.

What about your PC, tablets or phones? Clearly they need to be updated from time to time. CISO Magazine in 2020 reported Microsoft's end of life for Windows 7, at that time reported that "a Windows 7 PC, especially one connected to the internet and not receiving extended security updates, can be compromised in a matter of minutes, or even seconds." Five years later, there are even more risks and more powerful ways to exploit vulnerabilities. A foothold in your home on one machine makes it incredibly easy to hop from machine to machine. Most researchers agree it isn't a matter of "if", but "when". Patch and update regularly.

A 3D printed mount for a Kenwood TH-D75

by Larry McDavid

I recently bought a Kenwood TH-D75A HT with the intention of using it for APRS in my car. I wanted a case I could just drop the D75 into that would hold and protect it in my car. Fellow FRC member Bill Webb is the expert in 3D filament printing and he found several kinds of printed TH-D75 cases shown on the Thingverse website. But, I wanted a case that would allow me to use the HT with cables already plugged into its right side connectors. Nothing seemed to allow that, so Bill and I have been working to design a new case that met all my needs. We have gone through incremental design changes and some prototyping. A new design that fits both the TH-D75 and the TH-D74 has evolved that allows HT drop-in with its cables, with an optional HT belt clip and with a hanger for an optional speaker/microphone. I'll describe the design evolution.

Bill and I continue to mature the design of the printed mobile case. Two significant changes have recently evolved, both due to identification of actual issues with the design seen as a result of testing with prototype printed parts.

Recall the key feature of this printed case is the open right side that allows the TH-D75 to be inserted with speaker/microphone and power connectors installed. This open-top slot results in the right-side vertical arm needing more support and strength through increased wall thickness of the entire case.

The bottom front hanger bar for an optional speaker/microphone spring clip with its serrated, sharp teeth that fully engage each other led to a realization the the horizontal bar to which the spring clip is snapped must be about 1.5 mm thick maximum. If that relatively thin feature on a one-piece printed case broke in use, it would scrap the entire printed case.

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That led me to change the case design so that the hanger bar is removable and attached to the case with two M3 button head screws. The hanger bar could be made of stainless steel, brass or anodized aluminum and would be very durable. But, some would have difficulty fabricating such a metal bar. So, I asked Bill to design a stand-alone bar printed in the same ASA material as the case. If that printed bar breaks, it can be

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FRC June 4, 2025 Board Meeting Minutes

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:30 pm on Wednesday, June 4, 2025.

Board Members present: Bob Houghton, AD6QF, Gene Thorpe KB6CMO, Larry McDavid W6FUB, and Ray Rounds K6RAX.

Board members absent: Walter Clark, Bart Pulverman WB6WUW, Robert Gimbel KG6WTQ.

The May Board Meeting Minutes were reviewed and approved without amendment.

Treasurer's Report:
- New deposits: $70 AITP donations + $25 renewal + $.02 interest
- New expenditures: None
- Bank balance: $6,041.77 as of May 31 bank statement. Discussion about two outstanding checks from Antennas in the Park and the lost/missing check issued to Ray Rounds. Gene will reissue the lost check and Ray will cover any fees or future item posting should someone else cash it.

Membership:
- New members: None
- Bob's records show 26 paid members, plus 1 life member to date.

Old Business:
- Antennas in the Park comments/suggestions have been recorded. These will be pulled out a couple months prior to the next event to evaluate next steps and plan accordingly.

New Business:
- Gene asked about Paul Broden K6MHD, and Bob brought the group up to speed with the latest on Paul's progress.
- Saturday in the Park (6/14) will cover part two of the APRS workshop.
- Field Day 2025 - Bob suggested there was not enough critical mass to pursue our own club event. Suggestion that interested members visit other FD sites. Downey and Long Beach clubs were mentioned.
- Summer net controllers - Bob will be working out a calendar for Wednesday night net controllers while he is out of town.

Meeting was adjourned at 6:00 PM

Submitted by Bob Houghton AD6QF, President

ARRL Field Day Report - Ray Rounds

On Field Day, Saturday morning, June 28, four members of FRC visited the Associated Radio Amateurs of Long Beach (ARALB) at their ARRL Field Day operations. Gene and Cheryl Thorpe, Rich Belansky and I carpooled down to Recreation Park in Long Beach where ARALB had been setting up various radios to participate in the event's contests on several bands. Many of their club had come in on Friday afternoon to setup their equipment and pitched tents to stay overnight.

The club had assignments for each station in terms of which UHF/VHF/HF band would be worked and included a Winlink station. They had a sign in sheet for visitors, a refreshment station, porta-potties and a list of key phone numbers which included the park operations for sprinkler issues, park permits, and other agencies, such as the Long beach Police department. They had a detailed notebook with their permit and procedures outlined. This clearly wasn't their first rodeo.

ARALB has about 40 members and has the same engagement/recruitment challenges many clubs have. Their spot for Field Day was right off of 7th street (a busy roadway), and in the midst of several other park events and attractions (a bluegrass group was practicing, a nearly 100 year old casting club was practicing, kids playground and so on), so great visibility. They were delighted to share about their equipment and experiences.

Kudos to ARALB for their 2025 Field Day efforts. As bands permitted, they kicked off several contacts as the contest opened.

(3D from page 3)

replaced with a new one (or a metal one) without scraping the entire case. This printed bar includes edge radii to remove sharp corners.

A further subtlety is that the rear surface of this hanger bar (where the speaker/microphone spring clip with its *very* sharp teeth rest) must be smooth or it is difficult to remove the speaker/microphone without squeezing the spring clip. If that surface is smooth/slick (like metal), the speaker/microphone can be easily pulled off the hanger bar without squeezing its spring clip. I find this desirable. The original one-piece case and hanger bar had a rough surface because of the 3D printing direction; the speaker/microphone simply could not be pulled off the hanger bar without squeezing the spring clip. A stand-alone hanger bar can be printed with the rear side facing down on the printer; this results in a much smoother surface. And, it allows a full radius on the edges of this bar, removing sharp corners. This approach resolves how the speaker/microphone, when used, can be accommodated in the design.

A final issue was just recognized. When the Kenwood HT belt clip for the TH-D75 is used and the HT placed in the printed case, the tine of that belt clip falls into an opening in the rear of the case; that works great. The problem is that there is a horizontal bar across the top of the case; that bar prevents your thumb and forefinger from engaging the belt clip spring release and HT front to lift the tine and also lift the HT out of the case. I realized that top horizontal bar had to be removed from the design so the HT can be lifted out of the case when the belt clip is used.

I anguished some because removing that top horizontal bar across the case weakens the support for the right-front arm of the case. But, it turns out the increased case wall thickness provides sufficient strength of that arm. Additionally, I slightly shortened the overall height of the case; this gives better access to the HT when lifting it out of the case and, frankly, makes the case look better.

These may seem like subtle details but they are important for easy use and robustness of the design. So, what started as a one-piece design (including the optional rear spacer plate to give space for the HT belt clip if it is used) has morphed into a three-piece ASA printed-part design. This is what engineering and prototype testing is all about!

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Microphone Hangar Bar

Final Case Design

Belt Clip Spacer

I made good use of my home machine shop while mocking up this design. Having a full-size vertical mill and precision lathe at-hand converted ideas into hardware and helped the design process.

Bill has completed CAD design of the three parts and sent me stl 3D printer files. Because you may not have an stl viewer, I have made screen shots showing important views of each of the three parts. These screen shot photos are included above. Bill is printing these three parts in the new high-strength ASA filament material.

The goal of all this design and 3D printing work is to have a rugged and protective case to mount my

Early Prototype Case

Kenwood TH-D75 in my car so I can use its APRS features while mobile. My car center console has a smooth vertical surface on its sides. I will mount the spacer plate there using 3M VHB double-sticky tape and screw the case to that spacer plate. With the evolved speaker/ microphone hanger bar I can hang and remove the microphone without looking over the console. I recently added a robust trunk-lid antenna mount so I now have a tri-band mobile antenna. This will be an entirely no-holes-drilled mobile installation.

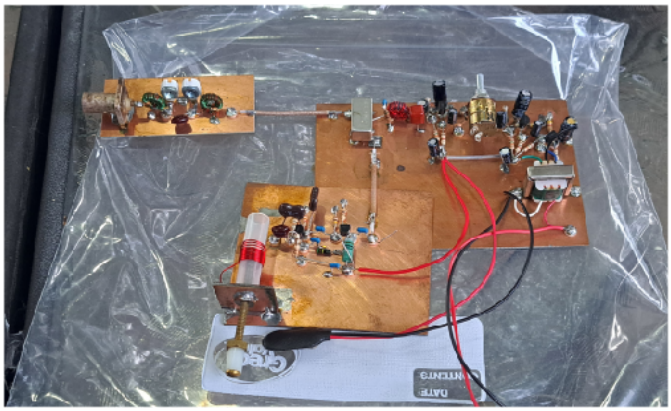
TAG Activity Report for June 2025

The meeting opened with **Dick Palmer evaluating Dick Bremer's** rather affordable American made, well except for the PCB maybe, radio. It was owned by someone who is now a silent key.

"Ham Builder". 10 meters to 80 and 25 watts which is bit out of Palmer's domain, (he's built more than 5 dozen QRP radios) but fortunately he didn't receive any radiation burns. (humor)

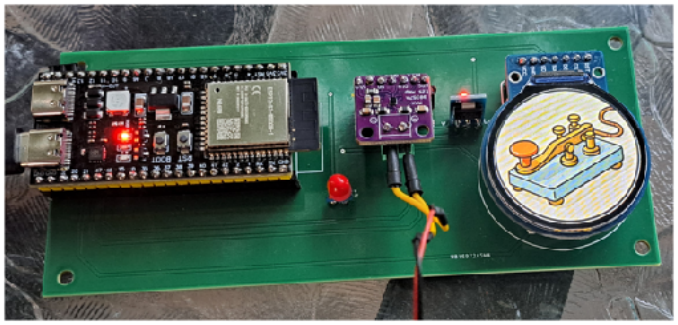
Harish Kumar ordered a telescoping vertical antenna and led a discussion about the copper rod ground vs laying thin wire radials on the ground. He had a question about connectors for the antenna, which gang handled.

Dick Palmer's latest project is a radio receiver he built using Manhattan Skyline technique. It makes for a very beautiful circuit. We all encouraged him to put it in a box with a glass lid and LEDs placed strategically.



For a brief video on Manhattan Skyline technique click on this;
https://www.youtube.com/shorts/1ZtgVAut4pg
Dick's circuit was a "direct conversion" receiver, which Walter learned meant there was no AGC and the advantage of that is that it can provide in the demodulator as much dynamic range as the transmitter's audio modulator could provide. In other words, it sounds fantastic. (No dynamic range compression.)

Bill Webb updated us on his use of A-I (by way of radio to a website) to update the weather for his "round" display. That amazed all of us. How do you address pixels in a rectangular grid without orthogonal edges? Oh well, nothing surprises us anymore.



He has discovered a superior plastic for his 3D printer but alas the odor is quite harmful and so obtained this box and a fan to pollute the planet instead.

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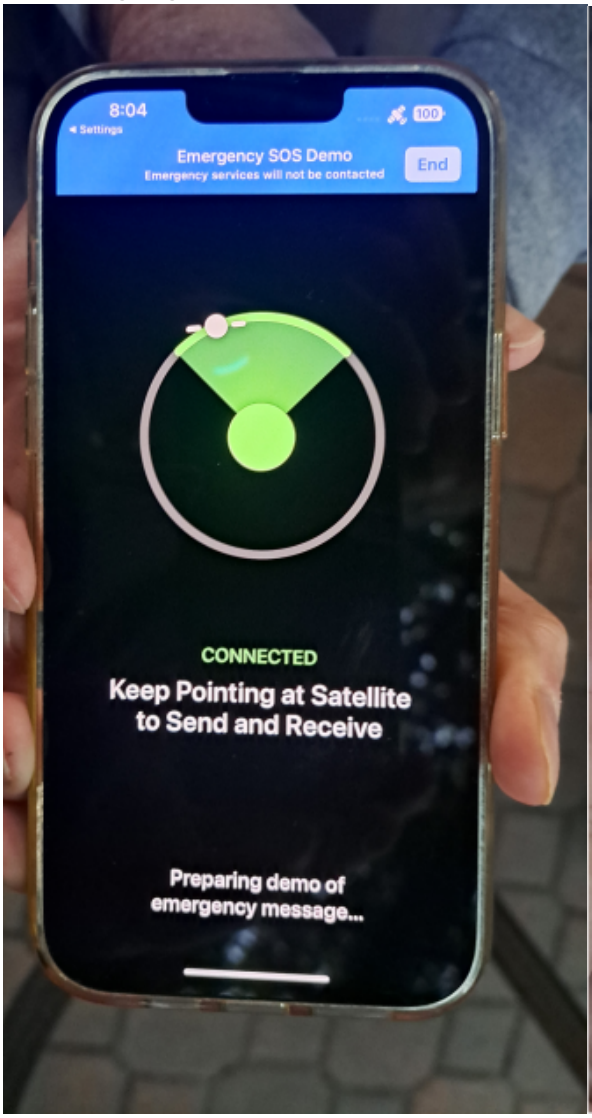
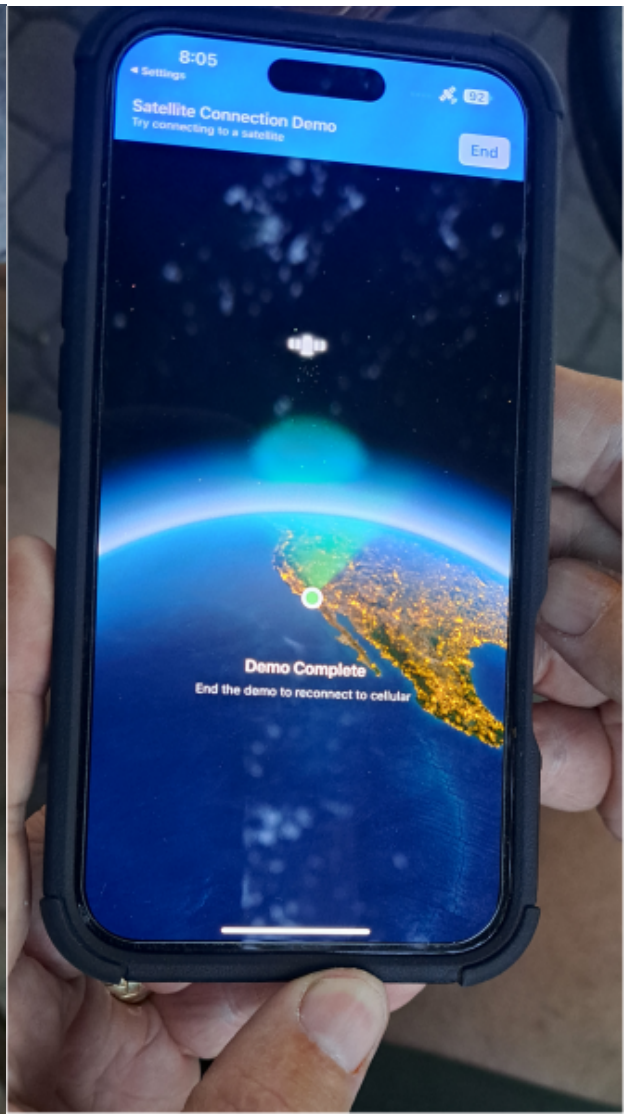
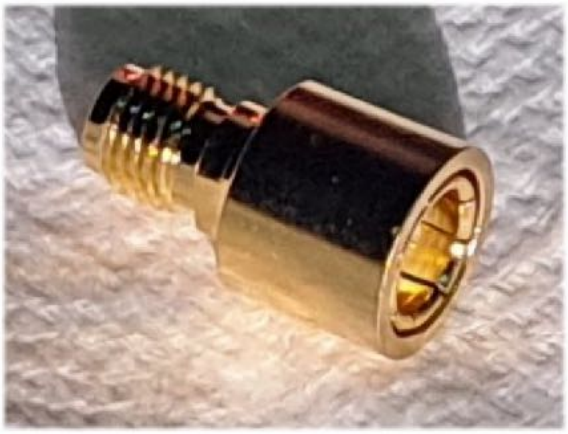
Ray Rounds Told us about his experience with using the satellite messaging feature built into recent model iPhones (and others).





Bob Houghton announced that part two of the APRS workshop will be held at our monthly “Second Saturday event at Hillcrest Park. Larry, Harish and Ray will participate.

Larry McDavid talked about antenna connectors for mobile application. Specifically the value of pull/push over ordinary threaded SMA. The advantage is the slipping allows more reliable connection over the years.



Larry also told us about the very expensive antenna tower he has had for many years. He is done with it and the neighbors are probably very glad for Larry’s generous gift of it to fellow FRC member Bill Preston in Texas. And Bill is further benefited by Dino Darling who was willing to truck it there. Wow.