



Smoke Signals

Newsletter of Fullerton Radio Club

July 2021

Field Day Brief

For those who didn't attend our Field Day activity on June 26, you missed some fun. We operated from the porch at the Izaak Walton cabin in Hillcrest Park, as usual. Plans were made in advance to limit the hours of activity so we wouldn't operate all night. The idea was just to make this year's FD a fun event rather than trying to score oodles of points. As for the point score status we made significantly more contacts than last year. I think there were 167 contacts on 20 meters alone. Dick Palmer WB6JDH is tallying the data for submission. We'll publish FD total results another time.

We began the setup process at 7 AM, began operation at 11 AM. And were closed down by about 8 PM to keep with the hours designated on the city permit.

The "sign-in" sheet shows that we had 20 in attendance, unless someone missed signing in. The tally includes 3 visitors. New attendees contributed significantly to the contact, and from those participating we now have 2 new club members. Bart Pulverman WB6WUW, one of the new members, made a major contribution to the 20 meter contacts list. The second new club member is Tom Smith KB6A. Neither of them are new to Ham Radio, just new in activity with FRC.

And, for the first time in an undetermined number of years, we were pleased to see active youth in Ham Radio! The entire Kim family (Leo KN0LEO, Aimee KN0AIM, Audrey KN0AUD, Justus KN0JUS, and Brielle, no license [yet]) were in attendance, with two of the licensed youth active in contact attempts. See accompanying photos on page 6.

Our thanks to all who participated or even just attended to make this a successful day.

Sadness and Condolences

Our condolences go out to club members Albert AG6OF and Helen KJ6IEM Solomon. We received word on Saturday that their mother passed away early that morning. Both of the senior Solomons have been regular attendees along with Albert and Helen at our annual Christmas holiday club meeting, so some of us will remember them from direct contact.

Free to a Good Home

April and I are moving and we need to clear out the parts for some never-finished antenna projects. There is a bunch of 1/2 and 7/8-inch low-loss Heliax cable, including some connectors, as well as aluminum masts and other tubing. Lots of flexible coax also. Call (714) 879-6895 and leave a message or send e-mail to homingin@aol.com.

73, Joe Moell K0OV

Next Club Meeting date:
August 18 2021;
On ZOOM! - 8:00 PM

This month we'll be having our usual informal discussion, targeting, among other subjects, anything you've been doing for early summer Ham activities.

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August FRC BOARD MEETING

The next Club Board meeting will be on August 11, 2021 and again will be a face-to-face meeting. Location will be identified later with email notification.

5:30 PM

All Members are welcome.

Show –and–Tell

Bring something of interest to the meeting to show and share your story.
Something old, new, or just of interest to hams.

Web site: www.FullertonRadioClub.org

July Board Meeting Minutes

The July 2021 FRC Board meeting was called to order at Sizzler restaurant at 6:07 pm by Vice President Paul Broaden K6MHD. Others present: Treasurer Gene Thorpe KB6CMO; Secretary Linda Endsley KJ6IHB, and Larry McDavid W6FUB. Visitor: Irene Broaden.

Minutes were approved.

Treasurer's report: Checking - \$4,158.52; Savings - \$2,608.76 . \$40 received as membership dues for two new members. 43 paid members (New members: Bart Pulverman WB6WUW, Tom Smith KB6A) and 2 life members as of 7/7/21

Old Business:

None

New Business:

Future reimbursements will notate item reimbursed.

Discussed changing the date of the Board meeting from the 2nd Wednesday of the month back to the 1st Wednesday of the month. The decision was tabled for discussion at a future meeting.

Regular club meetings to remain on Zoom until face-to-face meeting site can be identified. The City of Fullerton has not reopened meeting sites.

Bob suggests changing the net to HF for a while. 7208 kHz, 7:30PM, Wednesdays temporarily. He will track while traveling.

Next board meeting: August 11, 2021. Site to be determined.

Adjourned at 6:37 pm
Submitted by Linda Endsley KJ6IHB

TAG Activity Report for July 2021

This was the second in-person TAG meeting since COVID. Plenty more snacks this time including something new; hard seltzer. This seems to be quite fashionable this summer. And in fact totally new to me. For the science type it is CO₂ infused water with a hint of fruit flavor, like pineapple or cranberry along with 4% C₂H₅OH; ethanol. To chemical engineers the nick name "EtOH" emphasizes the importance of the OH group. This chemical is one of the most important chemicals in human history. It's consumption made safe drinking of stored water for most of man's history. EtOH biologically can directly affect the central nervous system in large amounts, so its consumption was subject to informal laws as well as laws enforced by those with the monopoly on the legal use of threat of punishment; govmint. Where and how we were consuming it was entirely OK.

Walter (host of the TAG meeting and writer of this report) started this evening's discussion with the CO₂ part of the hard seltzer. He brought out his CO₂ infusion machine. The silver thing to the left of the infuser is called a soda siphon. Both involve some fascinating physical chemistry which he spoke on for about 10 minutes. Highlight of the talk was infusing grapes with CO₂. When the cap was loosed the grapes began to boil which put off the guys there. I ate most of them. I think it improved the taste. When you bite down on them, they sting like a mild pepper but almost immediately that disappears and they become sweet. CO₂ makes water an acid



which stings the tongue. But of course, that boils away in the mouth which makes the amount of sting dynamic.



Tom Curlee continued Walter's discussion of physical chemistry with a fascinating description of a device used to calibrate thermometers. It uses the triple point of water. Here's a picture I found with Google of such a device. Tom described it as a thermos where the vacuum part was instead filled almost to the top with water and that hooked to a vacuum pump. The outside is cooled and when ice forms while the vacuum pump is working, the temperature is what we think of as what defines zero centigrade. Here's more in the form of a video, if this is of interest to the reader: <https://www.youtube.com/watch?v=EkFmrWsSzgA>

Tom is building a CNC machine from scratch using 3/8" to 1" aluminum plate. On hamming, he worked the last states needed for 6M WAS (Worked All States). He used FT-8 and there was a discussion on how hard that would be with voice and why it is that 6 meters is considered the magic band. (Larry pointed out that some guys call 6 meters the "magic band" because when propagation is good, it is really, really good!)



Dick Palmer connected one of his 40 meter rigs to my G5RV antenna in hope of reaching Bob Houghton on vacation. Bob would have been using a vertical antenna and the G5RV is horizontal, but it's high and a lot less work than setting up Dick's vertical.



Here's what **Bob Houghton** has to say from his end using email instead of 5 meters...*Hello from southwestern Utah camping at Cedar Breaks National Monument. I had planned on making a contact with the FRC group on the 40 meter band. It was to be a group effort. Joe Moell K0OV had run some propagation predictions using the W6ELprop software, determining that 40 meters was likely the best option for propagation between Cedar Breaks and Fullerton at the time of the TAG meeting. Dick Palmer WB6JDH had loaned me (Bob speaking still) a 20/30/40 meter wire vertical antenna that he is testing out for a friend. Dick was to bring his IC-706 and connect it to Walter's G5RV antenna. I set up the antenna in the meadow near our camping trailer. The only problem was that Cedar Breaks had been under a NWS Severe Thunderstorm Warning on and off all afternoon.*



Around two hours before the planned contact, the sky got a little brighter. Maybe this would work after all. A few minutes later, a park ranger came by to alert each camper that another severe storm warning had been issued for the area. I scrambled to lower the antenna and get the coax away from the trailer. Alas, our propagation experiment had to be cancelled. At 10,000 feet elevation, no matter how carefully you plan, mother nature has the last word.

Bob

Bill Webb is our expert on 3-D printing and has a never-ending need for it in the form of an electronic project he's always thinking up. In this visit he showed us a handle he made for Larry McDavid that will hold a 2-meter direction finder for the RDF hobby. He also made an enclosure for a ESP8266 based particle detector. The flame is captured here in a photograph for drama. What is more dramatic is after the flame goes out and the smoke disappears, the particle detector is still revealing some number of particles per cubic meter. It uses a laser to illuminate air being sucked in by a tiny fan. A few millimeters off to the side is a detector looking at the scatter from even the smallest of particles.



A laser to illuminate air being sucked in by a tiny fan. A few millimeters off to the side is a detector looking at the scatter from even the smallest of particles.

Larry McDavid was quite proud of the total energy his solar panels have captured from the sun. Well actually he was proud of the instrumentation associated with his solar powered house. The green curve to the right is a daily power consumption. The numbers on the left are watts and you can see a peak of about 4,400 watts when the sun was over head. The area under that curve is watts times hours and displayed there as 35.1 kWh. His instrumentation has been on since the solar panels were new and has been integrating (continuing to add the areas of those green curves and displaying that total in the upper right; 53.3 MWh. He did for us a conversion to equivalent mechanical energy. 53.3 MWh is about 72,000 Horsepower Hours.



Here's Walter going nuts over his new one-kilowatt leaf blower. Yes, that ball is still being supported by the stream of air at 45°. On the right is Bill Webb's particle detection project.



Field Day Photos



Cheryl Thorpe KE6TZU
Tom Smith KB6A



Dick Palmer WB6JBH



Tom Hall N6DGK



Joe Moell K0OV



Gene Thorpe KB6CMO
Leo Kin KN0LEO
Audrey Kim KN0AUD
Brielle Kim



April Moell, WA6OPS, radio coach
Audrey Kim KN0AUD
Leo Kim KN0LEO
Dean Syn KN6MUV



Bart Pulverman WB6WUW
Cheryl Thorpe KE6TZU

CLEANING SOLAR PANELS

The real-time effect of cleaning my home solar panels recently is shown in the attached plots of my solar system output from the SolarEdge performance-reporting system.

The first plot of data from my solar system is taken from the SolarEdge (inverter manufacturer) cell phone app. The cropped second plot is from the SolarEdge website and shows a bit more detail.

Note the output change between roughly 2 and 3 pm. That increase is due to cleaning the panels. However, note that sun meridian transit happened just before 1 pm so the system output at the time of cleaning is on the way down for the day due to sun position.

My panels face due south so my maximum system output is exactly at local solar noon, about 12:55 pm for this date.

I can move a pointer around on the live SolarEdge website to report the system output for any time on the plot. When I do that for yesterday's plot, the peak after cleaning shows about an 11.2% increase from the peak (before cleaning) at local solar

noon. But, after cleaning, the sun was past the meridian so the output was not the peak for the day. I will have to wait for a day with full sun to see what the new peak output is; currently, there are clouds so today's curve will have irregularities.

The monthly and yearly output totals at the top of the SolarEdge cell phone app report are not representative of the system performance because I recently had a solar inverter failure that shut the system down while SunRun repaired my system. My system is about 5.5 years old so the annual output is about 10 kWh.

When I get a clear day with full sun, I'll have the plots for that day and a full-sun day just before the panels were cleaned. Those plots will show the full effect of the panel cleaning.

My recollection of the effect on solar system output of previous cleanings is about a 6% increase; perhaps my panels were dirtier this time!

The panels were cleaned with only deionized water whose dissolved solids measured zero ppm. The water was dispensed directly into a soft-bristle brush on a long telescoping pole, which was slowly moved up and down across the surfaces of my 22 solar panels. Deionized water is so clean that it rather aggressively removes contamination. When finished cleaning, the panel surfaces were deep blue/black and the crystalline solar cell construction clearly seen. The whole setup and cleaning took about 1.5 hours. Fortunately, I can stand safely on the rear of the garage roof and clean the solar panels both below and above where I stand.

Yes, I am now the 52 Million Watthour Man!

Best wishes,

Larry McDavid W6FUB

