



Smoke Signals

Newsletter of Fullerton Radio Club

March 2019

Charging Forward - Experiences of an Electric Car Newbie

At the March FRC Board meeting, your Board discussed *Smoke Signals*, specifically the need for club members (that's you) to make more contributions. With the exception of Walter Clark's monthly TAG narratives (Thank you, Walter!), *Smoke Signals* has been a little thin lately. Okay, it's been a little thin for several years! One idea that was expressed, is that articles do not need to narrowly address ham radio, but *any* submissions of a technical or public service nature that might interest our club membership is welcome. With that in mind, I have decided to share a bit as I begin my adventure of owning an all-electric car. I'll call this series *Charging Forward*, because well ...

I am our family car mechanic. I have stubbornly fixed my own cars since I was sixteen. In high school and college I was my own mechanic, because I couldn't afford to pay a dealer to fix my cars. At some point in my life I realized I *could* afford to pay a mechanic, but I continued to do my own service and repairs both because I enjoy the challenge, and the few times I had warranty work done at a dealer I was unhappy with the sloppy work they did.

My wife's MINI Cooper has been a great car. Ten years ago, when she decided that she wanted to replace her nine-year-old Toyota Corolla with a MINI, I warned her that the MINI would not be as reliable as the Toyota had been. As it often turns out, I was wrong. In ten years, I have changed the MINI's oil and filter ten times. I had the tires changed once and I replaced the front and rear brake pads. After nine years with the original battery, I replaced that last year. The only unexpected repairs were a tiny air pump that tests the evaporative emissions controls and a replacement outside rear view mirror glass that fell out when she closed the driver's

door a few weeks ago. The MINI dealer wanted \$600 to change the emissions pump. I bought a Bosch replacement for \$60. It took an hour to install.

As the 10-year mark approached for the MINI, my wife decided she wanted a new car. She figures she will keep her next car for 10 years and decided she wanted an electric, partly because she thinks gasoline powered cars will be obsolete by then. I'm not so sure about that, but here we are.

We researched the Nissan Leaf, Fiat 500e, Chevy Bolt, Tesla Model 3, BMW i3, Hyundai Kona Electric, Kia Niro Electric, and Volkswagen e-Golf. After narrowing the search to the Leaf, Bolt and Tesla, we took delivery of a 2019 Tesla Model 3 last Thursday. More to follow next month.

Bob AD6QF

March Club Meeting

For the March FRC meeting, we are trying something different. We will show the first half of a two-hour documentary by Ken Burns, titled "Empire of the Air: The Men Who Made Radio"

This is a wonderful Ken Burns documentary about the history of radio. Based on 1991 book of the same title, by Tom Lewis.

"For 50-years radio dominated the airwaves and the American consciousness as the first "mass medium." In "Empire of the Air: The Men Who Made Radio", Ken Burns examines the lives of three extraordinary men who shared the primary responsibility for this invention and its early success, and whose genius, friendship, rivalry, and enmity interacted in tragic ways. This is the story of Lee de Forest, a clergyman's flamboyant son, who invented the audion tube; Edwin Howard Armstrong, a brilliant, withdrawn inventor who pioneered FM technology; and David Sarnoff, a hard-driving Russian immigrant who created the most powerful communications company on earth, RCA."

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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

The March 2019 FRC Board Meeting was called to order at 7:21 pm by President Larry McDavid W6FUB. Others present: Treasurer Gene Thorpe KB6CMO; Secretary Linda Endsley KJ6IHB. Directors; Bob Houghton AD6QF I; Paul Broden K6MHD; Walter Clark; Robert Gimbel KG6WTQ. Members: Tom Gaccione WB2LRH

Treasurer's report: Checking \$3,918.46 savings \$2,607.86

Old Business:

Discussed food for Antennas in the Park
Discussed items for Field Day
[The entire slate of officer candidates was approved by acclamation at the November club meeting.]

New Business:/Donations

Two renewals were received.

March general meeting will be a movie "History of Radio; Empire of the Air".

Discussed field trips to the Water Recycling of OC Water District in Fountain Valley and the Sanitation Department.

April 27 – Donate Life Run – Need more helpers

May 4 – Antennas in the Park

June 22/23 – Field Day

Next board meeting: 3 APR 2019

Adjourned at 8:42 pm

Submitted by Linda Endsley KJ6IHB

Donate Life Run/Walk Event

This Year's 2019 Donate Life Run/Walk & Family Festival Event is just around the corner. The event is held at CSUF at 6 am to 11:30 am. or so with the Family Festival afterwards. **We still need 6 or 8 more Amateur Radio Operators to help Us with this event.** Please check your calendar and if you can help out, please send me your info: Name, CallSign, E-mail Address, Phone Number; to Gene Thorpe KB6CMO@juno.com. Thanks to those who have volunteered already.

Gene Thorpe KB6CMO

FIELD TRIP

Attention all FRC Members!

North and central Orange County overlies a large groundwater basin managed by the Orange County Water District (OCWD). The Orange County Groundwater Basin provides approximately 75% of the potable water supply for 2.4 million people. Although the basin is vast, the average annual withdraws must be balanced by recharge from a variety of sources.

The Groundwater Replenishment System (GWRS), a joint project of the OCWD and the Orange County Sanitation District (OCSd), provides enough new water for nearly 850,000 residents and has become an essential element of local water supply.

In early May, there will be a tour of the facility in Fountain Valley. If anyone is interested, please contact me ASAP at tsgaccione@yahoo.com. We must RSVP with the number of attendees. The tour takes approximately 2 hours.

When and Where:

OCWD Facility
18700 Ward St, Fountain Valley, CA 92708
Cross Streets Ellis and Ward
Friday, May 3 ; 10AM

Tom Gaccione <tsgaccione@yahoo.com>

CQ Field Day 2019!

Fullerton Radio Club, Western Amateur Radio Association, and former HDSCS members will be having a Field Day operation June 21-23 at Hillcrest Park! We will be set up at the Isaak Walton League Cabin in the park, and we will operate from 11AM Saturday until 11AM Sunday. Additional information to follow.

Neat Kit: 40m through 10m Multi Z Tuner from QRPGuys

William Phinizy, k6whp

Some time in early December, I determined that my soldering iron needed thawing out and, while I was more or less burdened by stuff to do in anticipation of the holidays, I did not want to go full-tilt boogie on one of the innumerable single-board transceiver kits I had stockpiled for my retirement nor was there spare time to jump into one of my repair/salvage jobs similarly warehoused.

I stumbled on the QRP Guys 40-10 meter tuner kit and followed up my research with several YouTube videos detailing the kit and describing its construction and operation. So, having a couple of double sawbucks lying around loose in the purse -- it retails for \$40 -- I kicked in for one and after a couple of weeks of waiting, the kit arrived. (Be advised that the QRPGuys are a little slow in getting their kits to your door but they *will* arrive.)

The kit is interesting because it not only includes the PCB but also a "case" as well. Actually, more specifically, the PCB comes in two pieces that form the case. (See pictures below.) The parts are mercifully through-hole and the main inductor is wound on a toroid. It's a little complicated but the instructions are complete, well-written, and festooned with helpful photographs and diagrams to assist in the construction.

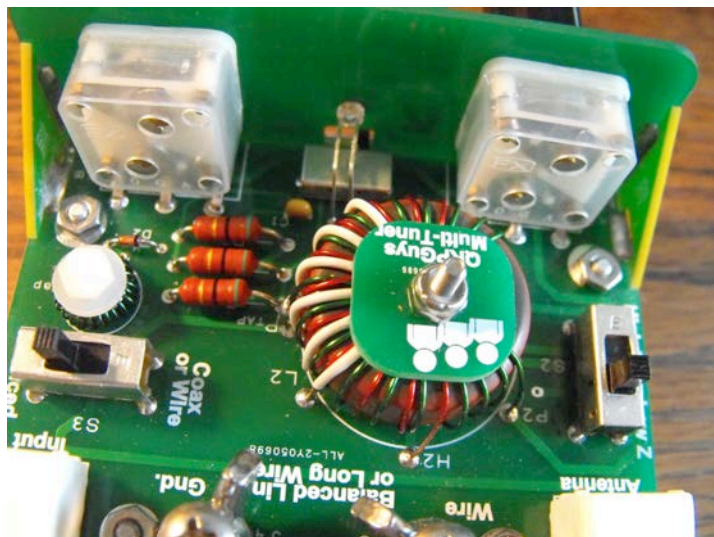
The YouTube videos are also of immeasurable help as well.

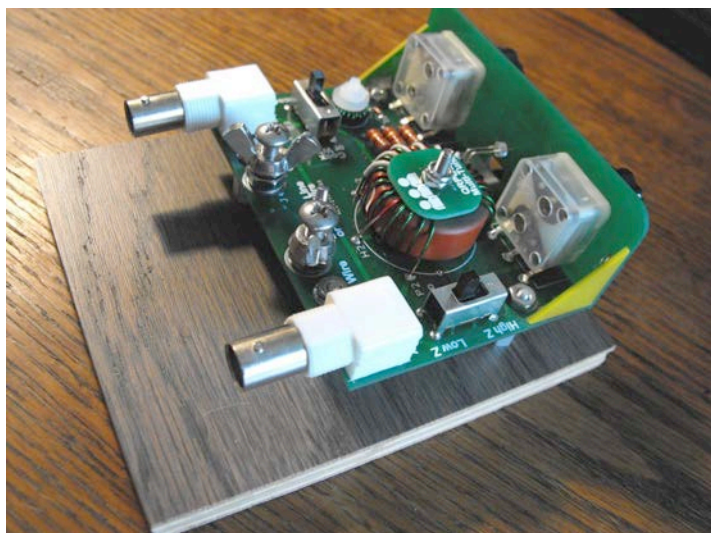
It is easy to dismiss this as just another collection of those type of plastic caps, a large tapped, toroid coil and the usual SWR indicator accoutrements. But, it is apparent that there was a lot of thought put into this with respect to the PCB layout, building the "case" with the gussets and face plate, and the overall look and feel of the finished product.

The only thing I "added" was one of those Home Depot flooring sample chips as a wooden base to add stability and heft. Seems to have turned out fine.

And, as far as not needing a new tuner, I think this little beast is a nice addition to some of the small QRP kits I am about to build. Don't you?

Herewith are a flock of pics to give you a better idea.





Point of Clarification!

It appears that some Club members are unclear as to the results of election of officers for this year. The election was held in November, with results announced then and again at the Holiday Dinner where officers were installed. The slate of candidates was approved by acclamation at the November club meeting. For clarification here's the list of Club officers.

Elected Officers

President: Larry McDavid, W6FUB

Vice President: Open

Secretary: Linda Endsley, KJ6IHB

Treasurer, Public Service & Membership: Gene Thorpe, KB6CMO

Elected Directors:

Richard Belansky, KG6UDD

Walter Clark

Robert Gimbel, KG6WTQ

Bob Haughton, AD6QF

Director & Newsletter Editor

Paul Broden, K6MHD

Appointed & Volunteer Offices

T-Hunt: Joe Moell, K0OV

License Trustee: Albert Solomon, AG6OF

March 2019 MEETING

Wednesday, March 20, 2019

Chapman Activity Center

2515 San Carlos Drive, Fullerton

(Second street east of State College Boulevard
off Commonwealth)

Meeting time – 7:00 PM

Visitors are always welcome

Dinner before the Meeting:

Black Bear Diner

5:00 PM

April Board Meeting

Open to all Club members

Marie Callender's Restaurant

126 Yorba Linda Blvd., Placentia

First Wednesday of each month.

Next Board Meeting

Wednesday, April 3, 2019

QSO and dinner; 6:30 PM

Meeting: 7:30 PM

Activity Reports of the Fullerton Radio Club Technical Advisory Group for March 2019

The Technical Advisory Group (TAG) is open to anyone willing to drive to member Walter's house in Fullerton. (for directions contact him at: walterClark@roadrunner.com). TAG meets at 7:00 PM the Wednesday before the club meeting. We chat about any subject of interest to radio geeks; the hard sciences like astronomy, electronics and well tonight, electric cars. Before everyone got there, discussion had already started on batteries. The invitation to the meeting

suggested a theme that everyone bring in their used batteries and used-up tubes of glue for someone to take it all to the Household Toxic Waste facility on Blue Gum. No one but Walter brought anything and he had a tub-load. The battery discussion started with what brands and what type of batteries leak. That discussion led to the problems Nissan Leaf is having with their batteries. Even their newest model does not cool the batteries like Tesla does.



Bob Houghton's wife Maijian bought a Tesla and of course Bob has become quite involved with the power supply and drives her car a lot. He related to us a story about how he got about \$3,000 knocked off the price of Maijian's car by a bit of luck and precise timing. He then went into great detail on the features of the car which can be summarized as the most amazing automotive-experience of his life. The final subject discussed in Bob's turn was about electric car chargers at restaurant's in the area.

Tom Gaccione told us about radio amateurs who use HF band receivers and data recorders to discover a correlation between environmental noise level and seismic activity. . . an RF Seismograph. The correlation



between heightened levels of noise on the amateur band and hundreds of earth quakes (anywhere in the world) above 6.7 on the Richter Scale is 90%. That led to a discussion on what Bob Houghton calls citizen scientist. Which is what we are, or long to be, maybe. For more on RF Seismograph, see the website at: <http://users.skynet.be/myspace/mdsr/seismograph.htm>.

Tom read to us a bit about the higher atomic weight elements as a way of noting the 150th anniversary of the Periodic Chart. In 1869 Russian chemist Dimitri Mendeleev started the development of the periodic table, arranging chemical elements by atomic mass.

Tom is an avid reader of the Consumer's Report and shared with us a bit about the reliability of recent makes of cars. Japanese and in particular Toyota seems to fly pretty high. Bob Houghton suggested <https://thewirecutter.com/> as a free alternative to Consumer Reports.

Tom and Bob are going to an upcoming Von Karman lecture at JPL. He listed for us some example lectures that happen once a month: Exo-planets, clouds and climate, cubesats (that one's in May Dan Slater), and the

Mars rovers. For more on this see: <https://www.jpl.nasa.gov/events/lectures.php>

Tom has the most to contribute at TAG, but his last point of discussion set the room on fire. It was on grounding at the service entrance to homes. Joe Moell and Larry McDavid have the most experience with the neutral wire on the cable that comes into your house from the power pole. It was a learning experience for the rest of us.



Larry McDavid always brings something in to show us. Usually it is an antique scientific instrument. On an eclipse expedition to Bolivia he picked up (or was inspired by seeing) an antique carbide lamp. He bought one and showed us how it worked and how you light it. It is of course an open flame which you can't use in a coal mine. So he also showed us a Davy Lamp which used a fine mesh screen to prevent the fire from propagating outside of the lamp even if the coal dust is set on fire inside the lamp. https://en.wikipedia.org/wiki/Davy_lamp

Larry told us about his discovery of JK Electronics and I think was surprised at how many of us were already fans of that place, perhaps the one remaining electronic store in Orange County. <http://www.jkelectronics.com/>

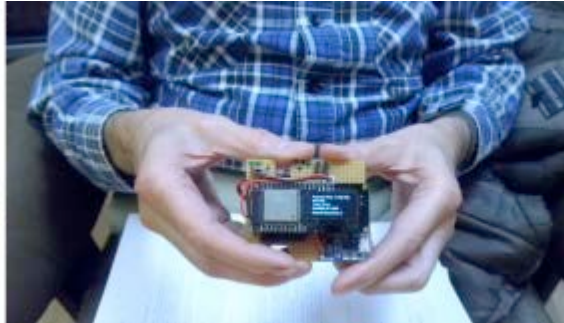
Bill Webb had another encounter with Spectrum: Internet, Cable TV service. This time very pleasant. It seems that his periodic transmitting on 14.074 MHz resulted in interference on the 12.1 MHz cable internet return path. This is using the FT-8 protocol that was the exact same period as the delays his neighbors were experiencing on their internet connection. (Noise on the

return frequency used by internet even if conducted by cable is experienced by users as delays. Such is the nature of noise in the digital domain.) But instead of "your neighbors want you shut down your amateur transmitter" the technician said, "Can you work with me to solve a problem with the internet to your neighbors." Wow. The reason for this nice attitude was the fact that the technician is a recent ham having gone to Gordon West's ham class. He had a spectrum analyzer and recognized the FT-8 signature. Bill would transmit after the technician replaced a certain connector on the cable going to people's homes. He only wanted to repair those that stopped the interference.

Most troubling for Bill is the IBM buyout of his favorite toy, the WeatherUnderground. Bill not only has a weather station that is part of that network, he has also used their protocols in projects that use WeatherUnderground data. The amateur aspect of this network is going to be greatly diminished. He and other weather amateurs will be switching over to <https://openweathermap.org/> This website is actually the one for users of the weather network (like the readers of this newsletter). You don't even have to enter

your location. It asks you to merely click on permission for them to learn from your computer where you are. There is competition though not as good;

OpenWeatherMap. Bill has already starting using OpenWeatherMap in the form of an ESP-32 controller programmed to display the latest data from them.



Joe Moell brought a new RDF (radio direction finding) receiver/antenna set. This one from is from RigExpert a Ukraine Company who make professional grade antenna analyzers. It's a bit on the high side at \$480.
https://www.rigexpert.com/files/manuals/fr144/UserManual_RX144MHzEn_1.pdf

He's going to bring it to Antennas in the Park so anyone can play with it, if they want. This unit has AM demodulation which is what is used in Europe. But Joe

studied the demodulation specifications and felt it might work with our FM transmitters. (Although he could use AM transmitters in the hunt, then other makes of RDFs won't work.) He tried it and sure enough the FM transmitter can be heard, but a lot noisier than with the proper modulation. The discussion went off into the coordination of Antennas in the Park and insurance for the event.



Joe's RigExpert RDF antenn/receiver

Dick Palmer's Mystery Gizmo of the month. -->



Dick Palmer brought a mystery gizmo of the month with him. It has Nixie Tubes which is about all that is noteworthy about it. He left with no one having any worthwhile suggestions for it. It was a source of amusement with suggestions like virginity restorer, boat anchor, and of course an interociter
<https://www.youtube.com/watch?v=0gGY4FgUViI>

Dick Bremer told Walt he was drafted at the SBMS meeting he missed to find another place to have the Microwave Tune Up Party. To make the discussion appropriate for TAG he and Walter told the group about the need for Microwave Hams to calibrate their rigs at a park. So Dick and Walter will be driving around town looking for the right setup.

LATEST NEWS

[Online Tickets to 'Explore JPL' Available Soon](#)

WHAT: "Explore JPL" will be held at NASA's Jet Propulsion Laboratory in Pasadena, California, May 18-19 from 8:30 a.m. to 4 p.m. Tickets will be available to the public online at 8 a.m. PDT on Saturday, April 6, 2019.

Visitors will have the opportunity to see, among other things, full-sized models of Mars rovers and to view the Mars 2020 rover that is being constructed in the Spacecraft Assembly Facility. Attendees can also see mission control and the machine shop, where precise parts are made for spacecraft.

Tickets are free but very limited and will be distributed on a first-come, first-served basis, with a maximum of five tickets per requestor. Orders for more than five tickets may be subject to cancellation. Tickets will be provided for specific time slots and must be reserved for specific names.

To attend, visitors must have their tickets in hand - nobody will be admitted without a ticket - and anyone age 18 or over must show a matching legal ID. Tickets are not transferable and cannot be sold.

Although children under two do not require a ticket, experiences at the event are not intended for very young guests.

Vehicles entering NASA/JPL property are subject to inspection. Visitors cannot bring these items to NASA/JPL: weapons, explosives, incendiary devices, dangerous instruments, alcohol, illegal drugs, pets and all types of skates, skateboards and Segways. Bicycling to NASA/JPL is welcomed, but not inside the event, as the venues are crowded with pedestrians. Bike racks will be provided near the main entrance. No bags, backpacks or ice chests are allowed, except small purses and diaper bags. Drones are not allowed to fly over NASA/JPL under any circumstances.

Follow @NASAJPL on Twitter and Instagram, and join the conversation by using the hashtag #ExploreJPL.

WHEN: Online ticket registration begins promptly on Saturday, April 6, 2019 at 8 a.m. PDT

WHERE: For more information, visit:

<https://www.jpl.nasa.gov/events/special-events.php>

MEMBERSHIP RENEWAL / APPLICATION

Fullerton Radio Club
PO Box 545, Fullerton, CA 92836

(Please Print)

Name #1 _____

Call: _____

Class: _____

Name #2 _____

Call: _____

Class: _____

Address: _____

City: _____

State/Zip: _____

Phone #1: _____

Email #1: _____

Phone #2: _____

Email #2: _____

ARRL Member ☐ Yes ☐ No

Special Amateur Radio Interests: _____

Dues are \$20 per member, or \$25 per family. Students (full time) \$10

Bring your application and dues payment to the next meeting or mail to the above address.