President’s Column - June 2018

As I write this, I am in Truckee, California volunteering, along with Tom Gaccione, at the USA ARDF Championships. My watch is informing me that I have walked 8.28 miles today, and my feet concur.

This month, I would like to talk about what I think are two important and related issues: club meeting attendance and club speaker recruitment.

When I was elected your president, several of you told me that finding guest speakers was one of the club’s biggest challenges; membership recruitment being the other. In the past, the responsibility of recruiting speakers has fallen solely on the vice-president. This is stressful enough that we currently have nobody interested serving in the unfilled VP position. As a result, I have encouraged club members to give talks (or find speakers), and this has resulted in a number of interesting presentations. A huge thank you to club members Walter Clark, Larry McDavid, Rich Belansky, Tom Gaccione, and Bill Phinizy, all of whom have given talks in the past few months, with some of you having given more than one. I’m certain to have forgotten someone, so I’ll just apologize now. However, we can’t expect a small subset of club membership to support eleven talks a year.

It’s great to have talented homegrown speakers, but to fill the calendar, we need to broaden our list of potential speakers beyond FRC membership. But here is my problem: I’m not comfortable asking a guest to prepare a talk and give up an evening of their time to come and talk to us when their likely audience will be seven to ten people.

I think we are in a sort of chicken-or-egg situation. If we could attract a wider range of “bigger name” speakers, perhaps our meeting attendance would increase, but until attendance improves, we are not in a position to invite such speakers. I don’t see a way out of this dilemma, but there a lot of smart people in this club - so I would ask us all to be thinking about potential solutions. Maybe a meeting format change? Fewer speakers per year?

This leads us to our current situation: we do not have a speaker for June. After consulting with the Board of Directors, we have decided to “take a break” and not hold an FRC meeting in June. I will give a talk in July, and then we we have to see what happens after.

I hope to see you on July 18.

Best Regards,
Bob AD6QF

Note: NO FRC MEETING IN JUNE!

NEXT MEETING

Wednesday, July 18, 2018

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
1011 N. Harbor Blvd., Fullerton (at Berkeley)
June Board Meeting Minutes

The June 2018 FRC Board meeting was called to order at 7:30pm by President Bob Houghton, Others present: Walter Clark; Treasurer Gene Thorpe; KB6CMO; Secretary Linda Endsley KJ6IHB. Directors: Larry McDavid W6FUB; Paul Broden K6MHD; Robert Gimbel KG6WTQ; Member: Cheryl Thorpe KE6TZU; Visitor Irene Broden.

Minutes were approved with the change that the speaker for May would be Walter Clark.

Treasurer’s report: Savings - $2,607.54; Checking - $4,088.62

Old Business:
Bob Houghton contacted members on the membership list and highlighted the ones who didn’t reply.

New Business:
Received 2 membership renewals.
Field Day will be June 23/24.

Because the July Board meeting falls on July 4th, the meeting will be on Tuesday, July 3.

Next year for Antennas in the Park there needs to be a committee to divide to-do items.

The Christmas dinner will be on December 14 at Marie Callender’s.

Next board meeting: 3 JULY 2018

Adjourned at 8:26 pm

Submitted by Linda Endsley KJ6IHB
HAM JAM

Our 7th Annual HRO Ham Jam is coming up!

Saturday, July 7, 2018 is the date, store hours are 10AM-5:30PM, and once again we will be hosting our local clubs and communications specialists in the store parking lot for another educational and fun event.

Come see local communications vehicles, learn about Hospital Disaster Services, and see how many of the local clubs make various activities available to local hams. We look forward to hearing from any local group who would like to reserve space for this event. However, space is limited and will be available on a first-come, first-served basis. Unfortunately, we cannot accept any last minute requests out of respect for our neighboring businesses and the limited parking space here in our strip mall.

The hotdog lunch this year will be hosted by Big Brothers Big Sisters of Orange County courtesy of NCG Co, and Mr. Gordon West and many manufacturer representatives (including Yaesu, Kenwood, Icom, Comet/Daiwa, ABR Industries, and Bioenno among others) will be available for questions. Seminars will be scheduled on various subjects, including D-Star, C4FM System Fusion/Wires, and the hot new ZUMspot.

License testing will also be available most of the day; if interested in testing, please call Janet at the store at 714-533-7373 with name and contact information so that we may plan for appropriate seating.

Two prize drawings will be held during the day at 12 noon and 3PM. Winners will need to be present to win goodies from many of our suppliers who have donated some really great stuff!

Come join us for a fun-filled Saturday of ham radio; make it your goal to leave having learned at least one new thing and/or shared your own knowledge with at least one new ham.

Janet Margelli, KL7MF
Manager
Ham Radio Outlet

933 N Euclid St.
Anaheim, CA 92801
(714)533-7373 Tel
(800)854-6046 Tel
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anaheim@hamradio.com
<mailto:anaheim@hamradio.com>

FRC Mobile T-Hunts

Fullerton Radio Club mobile transmitter hunts continue on the third Saturday of every month. They are designed to be friendly to newcomers, with rather small boundaries and one continuous signal on 146.565 MHz. The winner is the vehicle with lowest mileage, not fastest time.

On April 21, Deryl Crawford N6AIN and Steve Wallis WA6PYE put a hidden transmitter in the parking lot of a Hear USA building at the intersection of Edinger Avenue and Tustin Ranch Road in the city of Irvine. Most of the mileages were close:

<table>
<thead>
<tr>
<th>Team Calls</th>
<th>Odo Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA6CYY</td>
<td>21.1</td>
</tr>
<tr>
<td>KG6EEK/AB6PA</td>
<td>21.7</td>
</tr>
<tr>
<td>N6ZHZ</td>
<td>23.6</td>
</tr>
<tr>
<td>KA6UDZ</td>
<td>43.1</td>
</tr>
</tbody>
</table>

Because he won the hunt, Ron Allerdice WA6CYY had hiding duties on May 19. His hidden transmitter was at the end of Vantage Pointe Drive near Nottingham Lane in Rowland Heights. Here are the results:

<table>
<thead>
<tr>
<th>Team Calls</th>
<th>Odo Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>KA6UDZ</td>
<td>13.0</td>
</tr>
<tr>
<td>N6AIN/WA6PYE</td>
<td>15.9</td>
</tr>
<tr>
<td>KG6EEK/AB6PA/Alexsa</td>
<td>18.6</td>
</tr>
<tr>
<td>N6ZHZ/Laurent</td>
<td>18.6</td>
</tr>
</tbody>
</table>

Scot Barth KA6UDZ has returned to T-hunting after a lengthy absence. Having won the May hunt by low mileage, he will be the hider on June 16. The hunt gets under way at 8 PM from the starting point at the top of Acacia Avenue in Fullerton.

73, Joe Moell K0OV
Green Versus Red Laser Pointers

At TAG, I talked briefly about green laser pointers and the two optical technologies employed.

Here is a good Wiki article on DPSS (Diode Pumped Solid State) lasers:


I extracted the attached portion for easier keeping. Note the DPSS optical technology is the more common frequency-doubling technology of inexpensive green laser pointers, though it is a three-step process starting with an infrared laser. It is not a two-step process.

I'm still looking for a comparable article on direct diode laser pointers. However, ZBolt (a manufacturer offering *many* laser pointers), offers both types, though they don't identify the two types so clearly on their website.

Frequency-doubler DPSS laser pointers put out 532 nm wavelength green light typically. Direct-diode laser pointers put out 515 nm wavelength green light typically. This wavelength difference may be the best indication of which optical technology type is offered.

I got interested in this again because of the frequent failure or intermittent operation or fiddling needed with cheap import (China) green laser pointers. They work and I've used them for years in my presentations but they are prone to failure and very often require fiddling with the push button switch or the two-part screwed-together case to make work during a presentation. Very annoying.

The common red laser pointer is nearly useless as a presentation pointer! The red spot is not bright enough on a projected PowerPoint slide. Sometimes I find myself looking around the slide to find the red dot of a pointer. Not so with a green laser pointer! The green dot is very bright, almost too bright. One reason is that the human eye is more sensitive to green light than to red light.

I bought one of the ZBolt BTG-6-P DPSS green laser pointers; it arrived today. It is a 532 nm pointer so it is a frequency-doubler type. The construction is much better than the typical import Chinese pointer. Of course, it also costs more. Even the push button switch seems vastly better. It worked immediately when I put two AAA cells in. It produces a very bright, small round green spot. I got mine on eBay because the price was lower than on the Z-Bolt website.

ZBolt also sells laser modules with integral power regulators. Some of these are 515 nm and direct diode lasers. They are specified with a slightly larger spot size. I'm told the direct diode lasers produce a slightly elliptical spot, not so round as the DPSS versions. I don't yet know why. But, they are more rugged.

One problem with the DPSS laser pointers is that the various optical elements are bonded in place with some kind of adhesive. Some on-line posters say assemblers hand position the elements until they work and hold the parts in place while adhesive cures. Lots of labor available in China... One of the failure modes is for the adhesive bonds to break; then the pointer rattles and is very intermittent.

ZBolt laser modules (there are many types available) are somewhat larger in diameter than a standard handheld pointer but could be made into a pointer; they all work on 3 vdc. A heat sink is offered that allows the green laser to be operated continuously. Some of these modules are direct diode types with 515 nm wavelength green output. I might get one of these to play with.

From my perspective, if you give PowerPoint presentations, you must have a green laser pointer. I've used many of the cheap ($6-$8) green pointers but they all have required fiddling and often just fail. I'm hopeful the better-quality ZBolt green pointer works more reliably.

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Best wishes,
Larry McDavid W6FUB
Neodymium ions in various types of ionic crystals, and also in glasses, act as a laser gain medium, typically emitting 1,064 nm light from a particular atomic transition in the neodymium ion, after being "pumped" into excitation from an external source. Selection of 946 nm transition light is possible, as well.

The most common DPSSL in use is the 532 nm wavelength green laser pointer. A powerful (>200 mW) 808 nm wavelength infrared GaAlAs laser diode pumps a neodymium-doped yttrium aluminium garnet (Nd:YAG) or a neodymium-doped yttrium orthovanadate (Nd:YVO₄) crystal which produces 1064 nm wavelength light from the main spectral transition of neodymium ion. This light is then frequency doubled using a nonlinear optical process in a KTP crystal, producing 532 nm light. Green DPSSLs are usually around 20% efficient, although some lasers can reach up to 35% efficiency. In other words, a green DPSSL using a 2.5 W pump diode would be expected to output around 500-900 mW of 532 nm light.

In optimal conditions, Nd:YVO₄ has a conversion efficiency of 60%,[1] while KTP has a conversion efficiency of 80%.[2] In other words, a green DPSSL can theoretically have an overall efficiency of 48%.

In the realm of very high output powers, the KTP crystal becomes susceptible to optical damage. Thus, high-power DPSSLs generally have a larger beam diameter, as the 1064 nm laser is expanded before it reaches the KTP crystal, reducing the irradiance from the infrared light. In order to maintain a lower beam diameter, a crystal with a higher damage threshold, such as LBO, is used instead.

Blue DPSSLs use a nearly identical process, except that the 808 nm light is being converted by an Nd:YAG crystal to 946 nm light (selecting this non-principal spectral line of neodymium in the same Nd-doped crystals), which is then frequency-doubled to 473 nm by a beta barium borate (BBO) or lithium triborate (LBO) crystal. Because of the lower gain for the materials, blue lasers are relatively weak, and are only around 3-5% efficient. In the late 2000s, it was discovered that bismuth triborate (BiBO) crystals were more efficient than BBO and LBO and do not have the disadvantage of being hygroscopic,[3] which degrades the crystal if it is exposed to moisture.

Yellow DPSSLs use an even more complicated process: An 808 nm pump diode is used to generate 1,064 nm and 1,342 nm light, which are summed in parallel to become 593.5 nm. Due to their complexity, most yellow DPSSLs are only around 1% efficient, and usually more expensive per unit of power.

Another method is to generate 1,064 and 1,319 nm light, which are summed to 589 nm.[4] This process is more efficient, with about 3% of the pump diode's power being converted to yellow light.[5]
Activity Reports of the Fullerton Radio Club
(Technical Advisory Group) for June 2018

Walter Clark demonstrated an experiment that doesn't work. It was supposed to be one of 6 experiments he demonstrated for the San Bernardino Microwave Society in a tech talk on electromagnetic polarization. It was to show off how a Magic Tee works. Since it doesn’t work, he didn’t show it there. But the TAG is informal so one can show things that are interesting even if they don’t work.

The most interesting radio thing Walter did this month, or rather witnessed this month, was the tree trimmers of Fullerton reinstalling his G5RV antenna. Walter was taking down the antenna Dick Palmer put up a year or so ago, as the tree trimmers were approaching. Apparently one of the guys in the gondola noticed Walter's sacrifice and offered to put it back when they were through trimming. The man in the gondola spotted where it went through the trees and put it exactly back that way rather than over the top which he could have easily done. Walter was so moved by the gesture, he couldn’t bring himself to have the antenna placed higher.

Dick Bremer brought his winnings at the surplus stuff give-away at the last San Bernardino Microwave Society meeting. It was a 60/40 Selective Level Meter by Rycom Instruments. Walter pulled out the G5RV antenna and Dick tuned it to KFI to show off its ability to display side bands, which of course on KFI sounds goofy. The thing is used to diagnose microwave gear that supports data at HF frequencies. Dick doesn’t know what to do with it quite yet. One interesting thing is that his wife made it quite clear that he was not to bring any more stuff home, so he told her it was Walt’s and as soon as it is evaluated it goes back to Walt.

Tom Fiske, the last time he was at TAG told of his experiments with digital modes on the HF band. He is most comfortable with JT-65 but now working the newer FT-8. He says digital is something of a breakthrough for DXers because so many people can be contacted in an hour with just 10 or 20 watts and the smallest antenna you can load. This, in spite of it being a quiet sun. One interesting consequence of these digital modes is timing. Participants have be accurate to a fraction of a second and because so many people are, there are moments where there is absolute silence on the band.

Tom said he was talking (texting) to a Russian ham and bragged about having met the son Nakita Krustchev, whereupon communications stopped. That story led to a discussion on whether “not talking politics” was a rule of ham edicate or more of a forbiddence like playing music or advertising products over the ham bands.

Dick Palmer is getting ready for Field day (23 and 24 June) with the laying out of lines for the making of a delta loop for 40 meters. This will be for stringing over the treetops at Table Mountain. Dick has observed that at every field day, and every contest there’s more activity. And he’s very proud of his band of QRPers. Last year his group took advantage of the multiplication factor for QRP (under 5 watts) and placed 27th in the country and three years ago second in the SouthWest Division.

Brooks Kachner is still doing battery life testing. He should be done in September. He’s doing something a little unusual for battery performance testing. He’s doing it at 20 mA instead of a hundred or more, which of course is why it’s taking so long. The garage restoration project is only a few weeks away from being done so he can have his work bench back.
Bill Webb brought many examples of what his [3D] printer has done. They are so popular now you can get software that makes the CAD drawing and compiled ready for use without knowing any CAD language. You just change the dimensions of a box, for example. That is what he is mostly using it for. For enclosing his many Arduino and Raspberry Pi projects. Experience being so wide spread, precision has become a major point of discussion among users. It seems that there’s a difference from one printer to another, even in the same make, that must be compensated for, if you want accuracy in the dimensions of your printed objects.

He can’t say enough good things about his new hobby. He has also been following the market for low end printers and can’t believe how affordable they are. He brought a little boat and said that it takes about 3 hours to make it. He is experimenting on a thinner structure which will take longer to make.

Larry McDavid talked a bit about his Home Shop Metal Machine Society. It seems that they too are interested in 3D printers, but have an interest of course in the final product being metal. There was some discussion on alternate names for 3D printers, like filament printers or Stereo Lithography.

Larry mentioned the GPS patch antenna from last month (which Tom Gacione repaired) and that it seemed to have a lid (radome) that was unnecessarily big. Well, he brought in evidence that sometimes that space is filled with a spiral antenna that surely puts more gain in the sky direction. He passed around a remote antenna amplifier that had the appropriate voltage. (It would seem there’s a move to standardize on 3.3 V instead of 5V.)

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**July BOARD MEETING**

Open to all Club members
Marie Callender’s Restaurant
126 Yorba Linda Blvd., Placentia
First Wednesday of each month.

**Next Board Meeting**
July 3, 2018 (TUESDAY this month)

QSO and dinner; 6:30 PM
Meeting: 7:30 PM

**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*