



Smoke Signals

Newsletter of Fullerton Radio Club

August 2016

August Meeting

Topic: Search & Rescue Communications

Speaker: John Norman

Background: John has been a member of the San Bernardino Sheriff's Cave & Technical Rescue Team for over 10 years. This team is one of 20 teams staffed by volunteers and is tasked with missing persons searches and other wilderness missions. In addition to ground searching, Mr. Norman is qualified in high angle technical rescue, underground rescue in caves and mines, and alpine rescue. He holds an EMT certification and is a licensed amateur operator, KF6DPJ

The talk will include a slideshow of photos from actual missions and trainings, and a discussion of the different communication challenges his team deals with. A discussion of ways to improve communication, missing person location and other technical areas will follow.



John Norman, KF6DPJ

REMEMBER

The August meeting will return to the
Chapman Activity Center

2515 San Carlos Dr.

Fullerton, CA

**Wednesday,
August 17, 2016**

Dinner before the meeting at 5:30 PM at:

Sizzler

1401 N. Harbor Blvd.

Fullerton

Meeting time: 7:00 PM

Visitors are welcome

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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

August 2016 Board Meeting Minutes

The August 2016 FRC Board meeting was called to order by President Albert Solomon AG6OF at 7:30pm. Present: Vice President Walter Clark, Secretary: Linda Endsley KJ6IHB. Directors: Larry McDavid W6FUB; Robert Gimbel KG6WTQ and member., Helen Solomon KJ6IEN

Treasurer's report: [See below]

Treasurer not present

July minutes approved.

Old Business:

More articles are needed for input in the newsletters.

New Business:

Membership remains the same.

Hamcon will be in 2017 in Torrance.

Speaker for the July general meeting – John Norman, KF6DPJ.
Subject; Search and Rescue Communications

Next board meeting: 07 SEPTEMBER 2016

Adjourned at 8:00 pm

Submitted by Linda Endsley KJ6IHB

Treasurer's Report

For the Month of June, 2016: Checking \$2,022.04. Saving \$4,606.53. Total Balance \$6,628.57.

Note: If You Have not paid your Dues 2016 they are way past due. Please pay them.

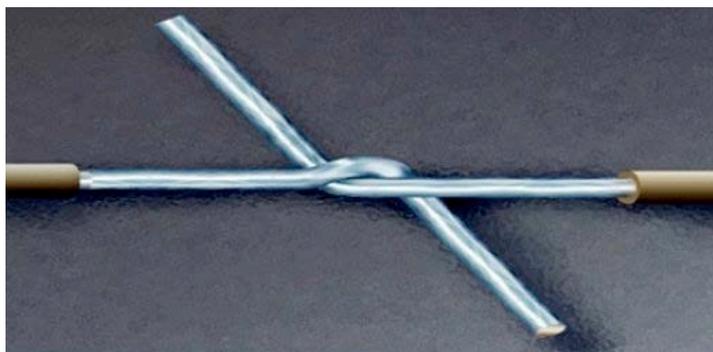
God Bless America & U 2

Gene Thorpe KB6CMO

Lineman's Splice

Hi all. If you have ever wondered the best way to solder two solid strands of wire together, here is a short article from Make Magazine on how to make a NASA-approved lineman's splice. Warm up those soldering irons. <http://makezine.com/2012/02/28/how-to-splice-wire-to-nasa-standards/>

Cheers; Bob Houghton - AD6QF



Ham Radio Exams September 10

The Hospital Disaster Support Communications System will hold examinations for all classes of ham radio license on Saturday, September 10, 2016, at Care Ambulance Headquarters, 1517 W. Braden Court in Orange. Testing will begin at 9:30 AM. Contact Ken Simpson W6KOS at (714) 651-6535 or W6KOS@arrl.net to register and get more testing information. Directions to the testing site are at www.hdscs.org.

While you're there, you can also visit with HDSCS members and leaders to learn about this all volunteer Amateur Radio group that backs up communications for Orange County hospitals. See their communicators' disaster boxes and portable gear that they use to relay critical messages in emergencies.

Transmitter Hunt Report

Murphy almost prevailed at the Fullerton Radio Club mobile transmitter hunt on July 16. Glenn Tobey AB6PA and Bill Greganti KG6EEK found a good location at the dead end of Garvey Avenue in Covina. But at 8 PM, their 100 milliwatt transmitter could not be heard at the starting point. They pulled out a higher power foxbox but the controller wouldn't function. Later, they determined that the Arduino board had failed.

The only way to get something on the air was to use the vehicle's Kenwood TM-742 mobile radio. This hunt's signal is supposed to be continuous, so Glenn just started jabbering into the microphone, with electrical tape holding the PTT key on the mike. Then Bill found a Morse Code practice program on his cell phone, programmed in the callsign, and put the phone next to the mike. It worked OK except that the 742 would time out and have to be reset every three minutes.

Despite the late start, everyone found them by 10:30 PM. Here are the results:

<u>Team Calls</u>	<u>Odo Miles</u>
N6ZHZ/KK6JDC	19.1
N6MJN	19.7
N6AIN/WA6PYE	21.8
WA6CYY	23.0
WB6JPI	49.0

Winners Bob Miller N6ZHZ and David Whittlesey KK6JDC are scheduled to hide on August 20. Hunters will gather at the top of Acacia Avenue in Fullerton for the 8 PM start on 146.565 MHz.

We haven't had any recent on-foot hunts locally because ARDF Team USA members have been up in the mountains, training for the World ARDF Championships in Bulgaria next September. We will probably be able to announce an on-foot session soon. Meanwhile, I'd like to modestly call attention to my "Homing In" column in the August issue of CQ Magazine, which is a full wrap-up of the USA ARDF Championships near Killeen, Texas last April. It was those championships that largely determined the makeup of Team USA 2016. Also in that article is the story of a ham in North Carolina who is teaching on-foot transmitter hunting and holding ARDF sessions for middle-school students of several schools.

73,

Joe Moell K0OV

Considering Solar Power?

After years of discounting home solar power systems as never paying for themselves, I discussed the issue last year with a SunRun solar contractor at Costco. What I learned changed my mind, solely because of the various rebates available to me as a home owner and solar system owner (not available as a solar system lessor, so you gotta buy to take advantage of these rebates).

I received a Federal income tax credit of 30% of the system purchase price (\$22,500), a local City of Anaheim cash rebate slightly more than the federal tax credit, a Costco 10% CashCard rebate and a 3% cash rebate for paying for the purchase on my Costco credit card. Altogether, that repaid me in cash 2/3 of the purchase price. With that cash rebate, I estimate my payback through savings in electrical utility cost will be just over three years, making this investment worthwhile. Had I know this earlier, I would have bought solar power earlier!

My system is designed to provide 97% of the electrical energy I used in the previous 12 months. It consists of 22, 3 x 5-foot photovoltaic solar panels mounted on my south-facing home roof surfaces, an optimal location and orientation. Each panel is rated to produce 275 Watts peak, for a potential total of 6050 watts, though this peak power is not practical to achieve for various reasons. I have a single 6000 Watt dc-to-ac inverter made by SolarEdge to produce the 240 vac 60 Hz power needed to supply my home and feed excess energy into the city electrical grid.

To put this solar energy in perspective, understand the panels are connected in series to produce 620 vdc at nearly 10 Amps. You don't casually mess with that much power!

Since last December when the system was installed, my solar system has supplied 1022 kWh more energy than my home has consumed, supplying this excess power back into the city grid. Soon, I will consume more energy than my panels produce because I will run my home air conditioning more. State of California law, known as Net Metering Agreement, requires utilities (City of Anaheim in my case) to purchase excess solar energy at the same price as the homeowner pays when using energy from the grid. That's why it is called a "Net Metering" agreement! As a result, my electrical utility invoice has shown a credit every month since I activated my solar system; I will begin to use that credit as I use more air conditioning.

The system is fun to just watch! The SolarEdge inverter

has a ZigBee wireless link to a ZigBee hot spot connected to my Internet router, which sends data to the SolarEdge company website. There, I can see the total energy produced by my system in almost real-time with about four minute resolution. I can even see the output of each of the 22 solar panels individually. All these data can be plotted in various ways. I learned how clouds and sun position affect system output. Because the system is new to me, I check these data every day!

I now have three electrical meters! One was installed by SunRun to send similar (but with less detail than the inverter SolarEdge website) to the SunRun website. SunRun monitors system performance and maintains the system under warranty for 15 years. A second meter was required by state and federal law to monitor total solar energy produced. The most important meter is the new City of Anaheim (my electrical utility) meter that measures both energy consumed from the city grid and excess solar energy delivered to the city grid; this meter determines how much I pay or how much credit I receive.

System installation required replacement and upgrade of my home circuit breaker and electrical entrance panel, included in the cost of the solar system. My old panel did not have enough capacity to accommodate the new 240 volt, 35 Amp breaker supplying solar power to the house and city grid. I was amazed to watch the electrical contractor install this new entrance "hot" without disconnecting my underground electrical cable from the city mains.

Of course, solar power does not work at night. And, the solar system does not work unless there is electrical power on the city grid. There are no batteries and the system does not work during a power failure. This is because the inverter controls its output based on the voltage, frequency and (importantly) phase of the power grid. There are stand-alone solar systems with batteries (in Hawaii, for example) but they cost much more and are cost effective only where electrical energy costs are higher than here in California.

I won't know with certainty how the solar system meets my total energy needs until a year has passed but it is on-track to meet its 97% design goal. Generally, though, the system has performed well and I should have had it installed much earlier, assuming the same rebates were available earlier. Without these rebates, solar power is not cost-effective though it is environmentally responsible. How can you beat free energy from our Sun?



Larry's Home & Solar Panels



I now have three electrical meters!

Larry McDavid W6FUB

A brief look at RFinder

A repeater directory in your smartphone
by: Bob Houghton - AD6QF

I'm sure most of you are familiar with the ARRL Repeater Directory. It has been around in more or less the same form for many years. Over the ages, the size of the pocket-sized edition has increased (as have, apparently, the size of pockets). There is now also a "Desktop Edition" for those of us whose eyes are on the wrong side of fifty. I guess calling it the "Large Print Edition" seemed a bit harsh.

More recently, there are also a few smartphone apps that serve a similar purpose. While a book works fine, there are a number of advantages of having of a repeater directory in your phone: less bulk, more information can be included, frequent updates, and the biggest one of all - the phone's gps can be used to display all the repeaters within a radius of your current location, sorted by distance. You can even see the repeaters on a map. If you are traveling in an unfamiliar location, this much handier than trying to guess if Mazourka Peak is the best repeater to use from your campsite near Bishop. In fact, last year, when I bought the 2015-2016 ARRL Repeater Directory, I was pleased to read on the cover "Mobile App Included." Excitedly, I started reading the slightly complicated procedure required to download the app. I forget the details, but I do recall that it involved copying an eight character "activation code" from the inside cover of the book. Of course, at the time I decided to install the app, I didn't have the book with me. After finally activating the app, I discovered that it fit somewhere on the spectrum between poorly-designed and broken. Not good. After fiddling with the app for an hour or so, I deleted it - amazed that the ARRL would put their name on such ~~crap~~ a poor product. Fast-forward a few months.

This June I attended the Friedrichhafen Ham Radio event (Europe's Dayton). I was staring at a beautifully engineered Japanese 40 foot tall stand-alone rotating tower that was on display - wondering how the heck they got it in the building. Gazing skyward (well, very-high-ceilingward actually), I awkwardly stepped backwards and, quite literally bumped into a ham by the name of Bob Greenberg, W2CYK. We commented about the tower for a couple of minutes and then the conversation turned to repeaters. Bob pointed to the logo on his polo shirt which read RFinder, and said, "Have you heard of us? We wrote the ARRL repeater app." Well, I wasn't sure whether to congratulate him or offer my condolences. He must have seen the expression on my face because he immediately said, "Oh no, not *that* one! ARRL has taken that off the market and adopted ours." He proceeded to pitch me on why his app was so great, and that it had been

adopted by the ARRL, RSGB, and a dozen or more other national amateur radio organizations. Mostly to make him go away, I downloaded it while we stood there and he showed me some of the features. It's actually pretty cool.

You can set the search radius, and filter which bands and modes you would like to display (Figure 1). You can display the repeater list sorted by callsign, frequency, or distance (Figure 2). It is also possible to display the repeater locations on a map (Figure 3). Beyond these most basic and useful features, Bob has added some interesting "social networking" features that take advantage of being connected to the internet. You can "check-in" to a repeater. In figure 2, you can see that AD6QF is "checked-in" to the Raytheon repeater. This means that all users of the app, when displaying the record for the K6QEH 146.97 machine, will see my callsign displayed. It is an invitation to call me on this repeater. I can see this as being very handy in knowing which repeater a friend (or anyone) is monitoring. There is also a setting to allow your location, callsign, and repeater frequency to be displayed on aprs.fi or openaprs.net when you check-in. You can also automatically post an announcement to your Facebook or Twitter stream indicating that you are monitoring a particular repeater.

There is an accompanying website that allows you to do a search from a point or to generate a list of repeaters along a route - handy if you are taking a cross-country trip. These lists can be saved in various file formats to send to your gps, Google Earth, or your radio management software such as CHIRP or RT Systems. For all repeaters in the database that have published power output and HAAT, the website has rendered coverage maps using an RF modeling program - a very useful feature! You can report interference, upload correction reports, and repeater trustees can add their repeaters or submit changes to the database directly from the app. I'm still exploring, so there are likely some features that I haven't yet discovered.

RFinder is subscription-based and costs \$9.99/year. You get the first year when you pay \$9.99 to download the app from the iTunes or Google Play store. Renewals can be done from the website. For more information, go to rfinder.net.

73, Bob AD6QF

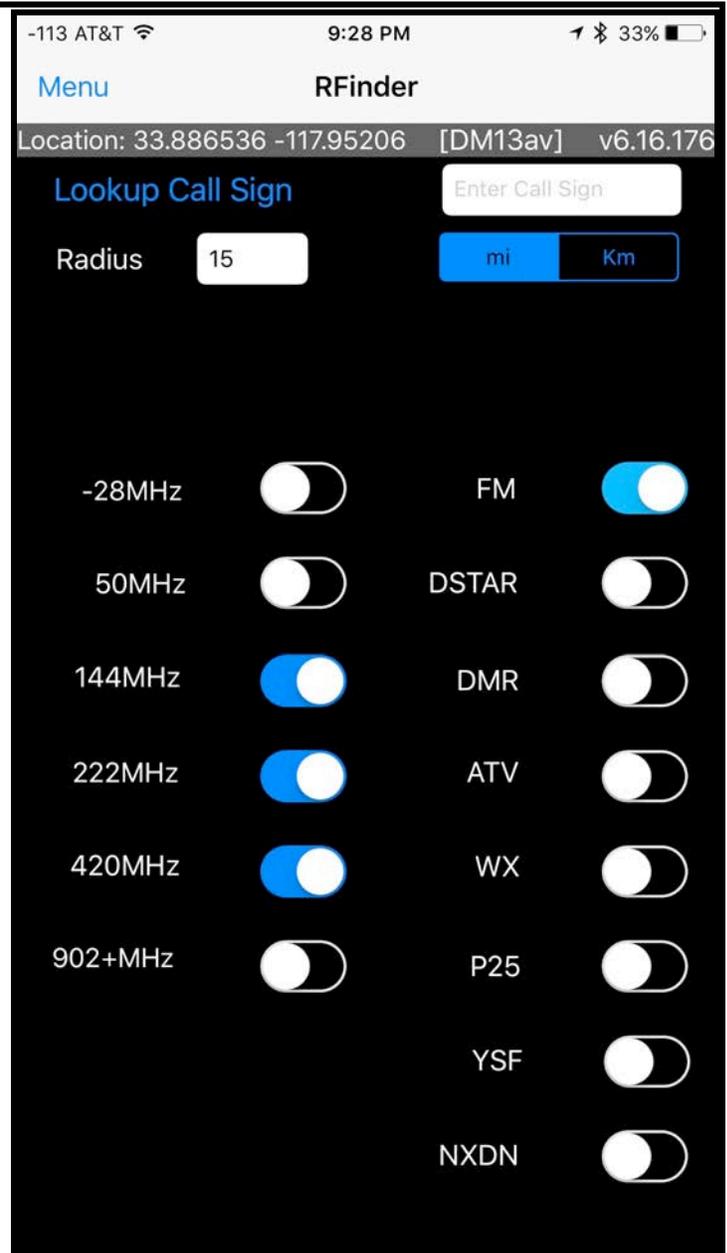


Figure 1

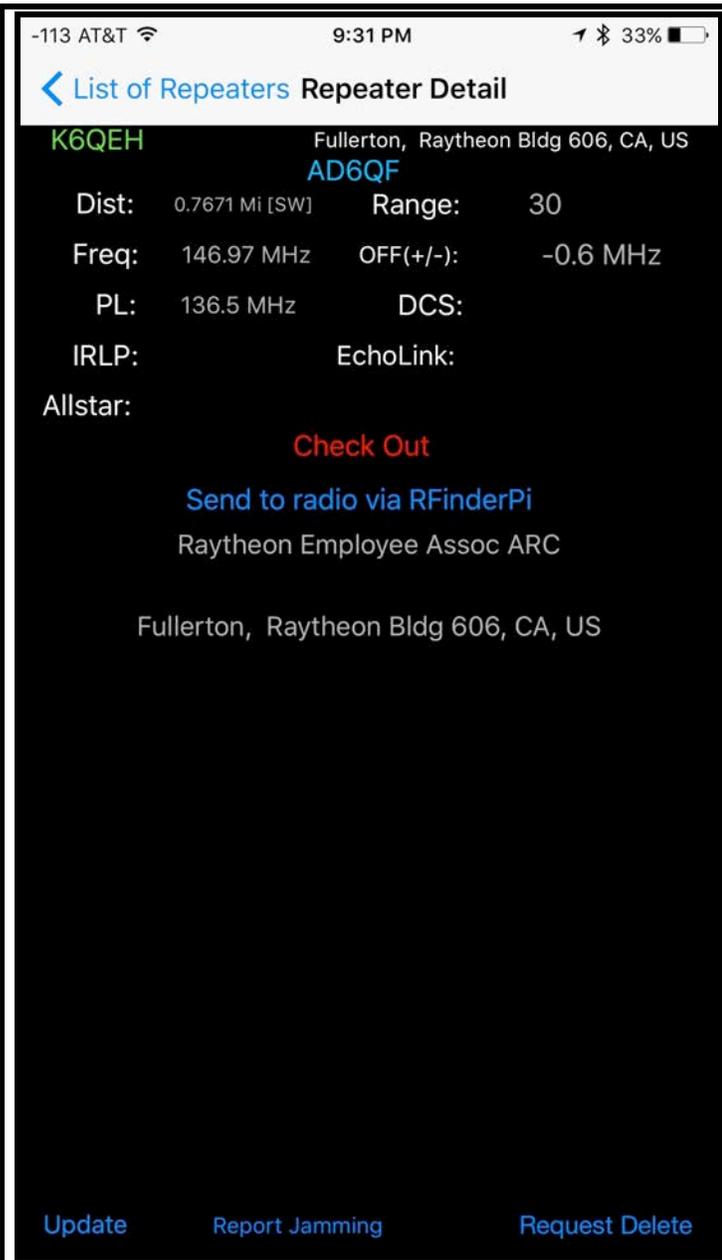


Figure 2

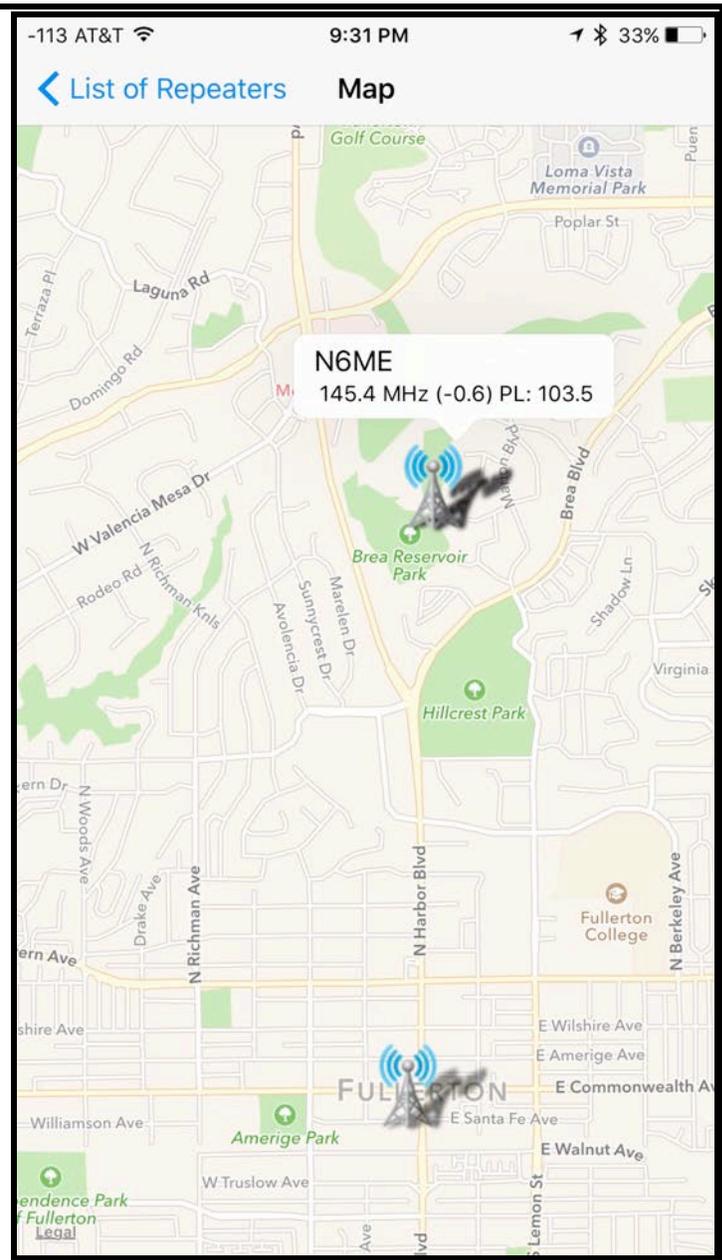
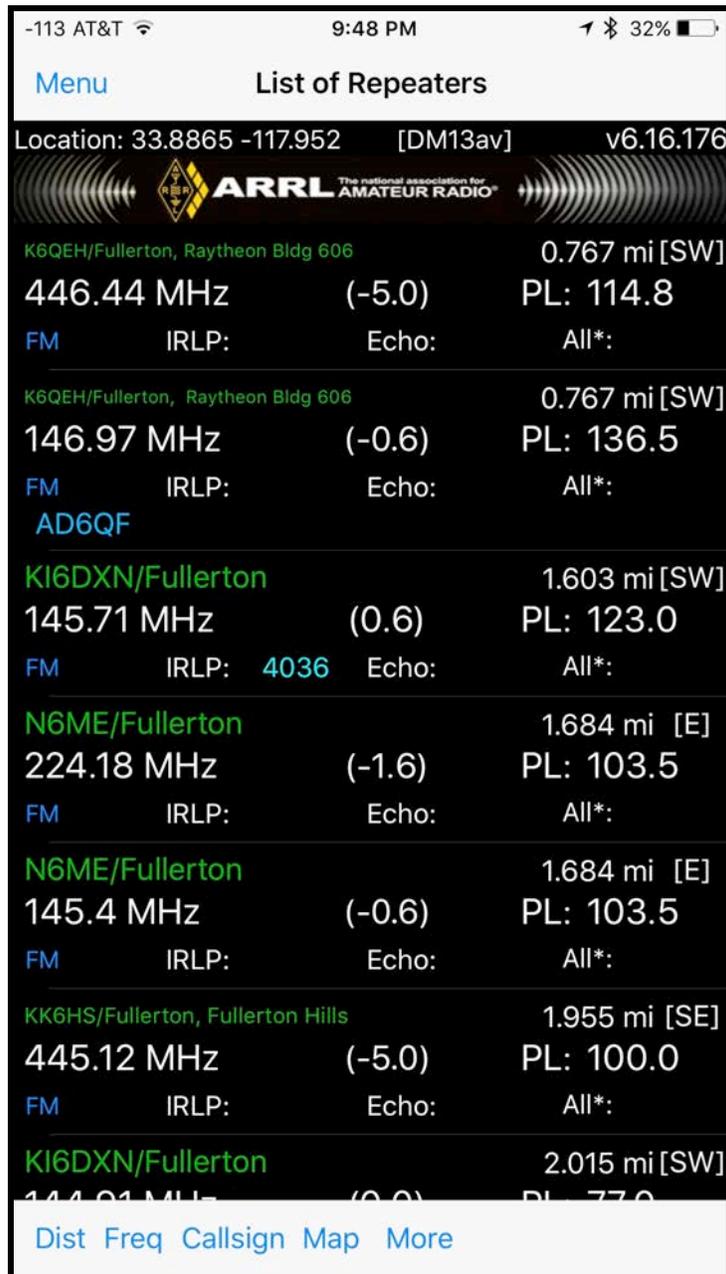


Figure 3



Example of repeater displays

FRC Board Meeting

Open to all Club members

Marie Callender's Restaurant
 126 Yorba Linda Blvd., Placentia
 First Wednesday of each month.

Next Board Meeting
September 7, 2016

QSO and dinner; 7:00 PM
Meeting: 7:30 PM