GOAT NOTES

Celebrating Amateur Radio!

https://gotahams.com

December 2022-January 2023

WG6OTA RPT: 449.160 (-) PL 77.0 enc/dec

The Editor's two bits...

Happy winter! Well, we had some rain back in October and November which we desperately needed. Lots of lightning and thunder during a couple of storms. As soon as the rain started, Yours truly switched his antennas to ground and unplugged the power, thus avoiding any damage. I learned a hard lesson about this when we were living in Missouri!

Bottom line: ALWAYS disconnect antennas and pull the plug on your radios and station computer when the WX turns sour.

One thing I'd like to start doing is an occasional feature on our members' stations. If you'd care to share, send me some pics or your station, antennas, etc. If using your phone to do this, please send them in the smallest size your device will allow. Otherwise I can work around larger sizes. This helps control the size of the newsletter. Thanks!

Regardless of the weather, Pat & I hope you all have a blessed and joyous holiday season!

73 de N6PCD

RADIO ACTIVITIES

Monthly Club Meeting

GOTAhams Monthly Club Membership Meeting - the second Tuesday of the month, 7PM , Zoom and In-Person. If you would like to join the meeting in person, please join us at Casa Jimenez Mexican Restaurant in Claremont at 921 W Foothill Blvd. Please arrive an hour early (at least) at 6PM so that you can order your dinner and have it out of the way ahead of the meeting. (The restaurant does expect you to order a meal). We'll be in the back room. See the weekly email for Zoom details.

GOTAHams Nightly Net

Held each evening at 8:00 PM on the club repeater: 449.060 (-) PL 77.0. Please see Dave's weekly email for a list of topics.

Radio In The Park & Elmering in the Park

See the weekly email for days and times. These are fun events, so come on out and join the fun!

Monthly Simplex net

Hosted by Erik KN6NRQ on 146.580MHz. A great way to explore the reach of your 2 meter equipment without benefit of repeater, both receiving and transmitting. Last Wednesday of the month. See the Weekly email for vital details.

V.E. Amateur Radio License testing

LAST SATURDAY EACH MONTH AT 1PM. Location is Brackett Field airport in La Verne. Sponsored by the GOTAhams. Frank Westphal and his experienced team of examiners are resuming in person Amateur Radio License testing at Bracket Field Airport in La Verne. *See Dave's weekly email for testing requirements and other important details.*

The Santa Net

Share the magic of Ham Radio and Santa Claus with your children, grandchildren, and neighborhood kids. The Santa Net is held every evening between Thanksgiving and Christmas on 3.916 MHz at 7:00PM Central Time.

Interested?

If you would like more information about Amateur Radio, GOTAhams Club Activities, or have any interest in joining the GOTAhams Amateur Radio Club please contact the Club Secretary Dave Wilkie (K6EV) at K6EV@ARRL.NET. All are Welcome and no license is required to become a member.

MAKING THE MOST OF MY HT

A Good Antenna is Worth its Weight in Gold!

Submitted by KN6UBG, Bruce Gary

Bruce, KN6UBG

"You can't work them if you can't hear them" is a popular saying in ham radio. I learned the hard way that it can be difficult to use the WG6OTA repeater from a distance when I first volunteered to be a net control operator for the club's evening roundtable net. My house in Irvine is somewhere close to 40-45 miles from the repeater's location on Sunset Ridge. Before my upgrade I was using my HT, a Yaesu FT-70DR operating at 5 watts with a Diamond SRH77CA replacement antenna. (I haven't bought my HF transceiver yet, so the HT is all I have for my shack at this time.)

The biggest problem I experienced while running the evening net was that I was receiving signals from multiple sources, which confused me to no end trying to identify call-ins during the check-in process. Shortly after hearing of my frustration, Dave K6EV recommended the purchase of a small Yagi antenna, suggesting that I should be able to quadruple both my transmit power and receive signal strength towards the repeater while attenuating signals from other directions. That seemed like a logical solution.

With links to Amazon.com and my credit card in hand, I was shopping for my new Yagi and a portable speaker stand on which to mount it. Assembly couldn't have been easier, with just a few screws and set screws requiring simple tools. My first test was at 1 watt, and then I waited until I could meet with Dave so I could get SWR readings before going full power to make sure the antenna was properly tuned. At the repeater frequency, it appears I have a SWR of less than 1.5.

Now, with the Yagi set up on nights I am net controller, I have no trouble reaching the repeater and hearing callers. My next goal is to find a similar Yagi to use on the 2 meter band on simplex frequencies.

Please see the following page for pictures of the setup.

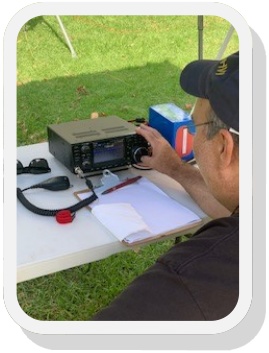
“Necessity is the mother of invention.”

TWAYRDIO brand Yagi Antenna, UHF 400-470Mhz, High Gain Out-door GMRS Vertical Base Antenna, 7 dBi gain.

PA Speaker Stand by Hola! Music, Professional Tripod Structure, 4-6ft Adjustable Height, Model HPS-200S

RADIO

In The Park



By Michael KN6HHW

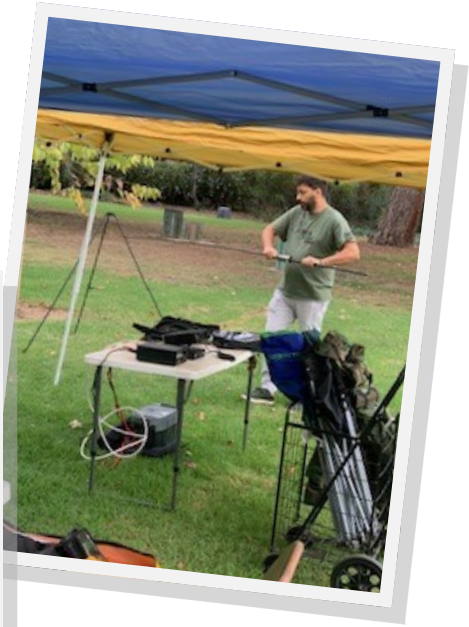
On October 22nd the Goats started out in Larkin Park in Claremont, for a Radio In The Park event, but we had to switch to Las Flores Park due to huge crowds at the soccer games. We had several HF stations setup. I talked with some of the operators, and this is what I found at three of the stations today.

Chris N6CTA was using a Yaesu FT-897D radio with a Yaesu SCU-17 to connect to his laptop. The SCU-17 allows CAT control as well as sound inputs and outputs from the radio to the computer through USB. Chris uses FLrig on Linux to control the radio and CQRLOG to log contacts. Everything is powered by a 30Ah battery box. Today Chris was mostly on 10m SSB with his screwdriver antenna connected to a ground ring with 32 radials which he made. Chris will be doing a presentation on this antenna in the near future. Many of the GOTAHams have been interested in this small, compact antenna that has been getting good results.

John KN6RRA was there with his flag pole on a brick. It is an aluminum flagpole, extendable to 30ft, anchored by a brick and concrete. Currently he has a 10m dipole on the top. John is a new Ham and a new member of the GOTAhams, joined by his wife and daughter which are also hams. John has an FT991a powered by a Bioenno battery. John was working 10m SSB today.

IN THE PARK, Cont.

K.C. KN6SLX is another new member. He is using a Icom 7300 with a 40m-10m Super Slider antenna. It is a tuned coil vertical that uses a guide to adjust for the band and K.C. is using a Nano VNA to check and fine tune it. K.C. is using a Bioenno battery for power in the park today. He made a few QSO's on 20m today.



Ya gotta love a day in the park!

Radio Fun Facts!

James Clerk Maxwell, a Scottish mathematician and scientist, was the first to foresee that radio waves existed. His book, published in December 1864, "A Dynamical Theory of The Electromagnetic Field," described light and radio waves as electromagnetic waves traveling through space. Other types of electromagnetic waves include Bluetooth, radar, x-rays, infrared, ultraviolet, and microwaves.

James Clerk Maxwell

Heinrich Hertz demonstrated radio waves in his lab in 1887. The unit of frequency of a radio wave — one cycle per second — is named the hertz, in honor of Heinrich Hertz.

The most powerful radio station ever built was:

WLW, a station licensed to Cincinnati, Ohio. It broadcasted at 700KHz, and at some point, in the 1930s, the transmitter's output was 500KW radiated power. Those in the vicinity of the transmitter could hear the audio in their pans, pots, and mattresses.

The first incident of telephone hold music was a mistake caused by a loose wire touching a metal girder at a factory. It turned the entire building into a mega radio antenna that would play the music from a next-door radio station when people were on hold.

Engineer's operating position at WLW, looking towards the transmitter.

Tech Stuff: What exactly does an antenna tuner do?

Every transmitter wants a specific value impedance load on its output. In this case the load is an antenna. Without getting too technical, impedance is a form of resistance where there is an opposition to current when voltage is applied. Impedance and its cousin reactance are found only in AC circuits (Yes, I know this is oversimplifying things. Please don't pepper me with nit picky comments/emails). The unit is Ohms and the unit symbol is *Z*. For nearly all amateur equipment, the load (antenna) must be 50 *Z* for the transmitter to work properly. By the way, you'll often see the symbol Ω (ohms) used to express impedance. This nomenclature is incorrect, but since it is so commonly misused it's become unofficially accepted.

Impedance varies with frequency. Even if you have the "perfect" antenna, it's not going to be perfect everywhere on all bands. Impedance mismatches between the transmitter and the antenna manifests itself in the form of a high standing wave radio (SWR). The farther you drift away from that "perfect" resonant 1:1 SWR frequency, the higher your SWR will be. SWR represents RF power reflected back to its source due to the difference in impedance between the energy source (transmitter) and the antenna. In extreme cases, the reflected power can damage the transmitter. This is the inefficiency an antenna tuner is designed to correct.

What an antenna tuner WON'T do

An old Elmer wisely quipped, *"all an antenna tuner does is lie to your radio!"* He was absolutely right. Antenna tuners are not magic pixie dust for out of whack antennas. The deficiencies and compromises that existed before are still there. The only difference is that your radio will happily believe the lie and think it is transmitting into a perfect 50 ohm load, which technically it is.

An antenna tuner does not actually "tune" or make any electrical or physical changes to your antenna. All it does is create a correct 50 *Z* appearance for your transmitter no matter what the impedance of the antenna system really is. Think of it like the transmission on your car. You could not connect the engine directly to the wheels and expect the car to perform satisfactorily under all conditions. An antenna tuner, like a car transmission, allows the power source to operate within a defined parameter even when the load varies.

If you have no better options and must deploy a less-than-awesome antenna, then by all means use a tuner to make it "good enough." It's better than not being on the air at all! But to the extent that you can, fix the deficiencies at their source. <u>Start out with the best antenna possible.</u>

Manual and automatic antenna tuners

Even though automatic and manual tuners perform the same basic function, amateurs should understand some important differences between the devices. An automatic tuner is literally as simple as pushing a button. It calculates the match required for lowest SWR and adjusts accordingly. On a manual tuner you have to adjust the settings yourself.

Continued on following page...

Manual and automatic antenna tuners cont.

An automatic tuner (at least the modern ones) typically do not have variable capacitors and inductors. They have banks of fixed value components. A microprocessor switches between different combinations of the capacitors and inductors. This is the ticking or buzzing sound you hear. Eventually the tuner finds the best combination to provide a 50 *Z* load. The ticking stops and you can proceed with your transmission. The process must be repeated for any significant change in frequency. The operation is seamless; just press a button.

Automatic disadvantages

The main disadvantage of automatic tuners is that there is a finite combination of possible settings. On a severely mismatched antenna system, your antenna tuner may have difficulty finding the 50 ohm sweet spot. Antenna tuners built into many popular radios are well known for this shortcoming. If the integrated automatic antenna tuner on your radio clicks and clicks but won't pull the SWR down as far as you hoped, it's because built in antenna tuners are only there to make minor tweaks. Anything more than that and you'll need and external tuner as they typically offer a greater range of correction.

The manual option

Manual tuners give you more flexibility. For example, if the "perfect" setting is between two fixed values in an autotuner, the computer cannot split the difference. It must choose one or the other. There will be a built-in factor of error. In a manual tuner, the operator can set the device to the exact best value. There is a natural level of refinement that cannot be duplicated by a computer because (theoretically) a manual tuner has an infinite number of settings.

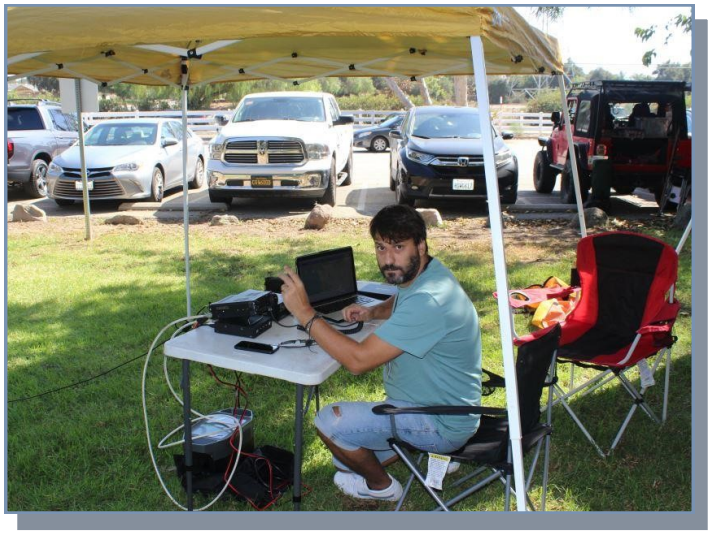
Manual antenna tuners have the added benefit of making the operator feel like…an operator. It's not plug and play. You have to know something and pay attention to what you're doing. It creates a personal connection to operating a radio that does not happen when you just push a button. Lastly, manual tuners are typically less expensive than comparable autos and do not require a separate power source unless there are other features on the device not related to the tuner, such as dial backlights or remote antenna switches.

There are not many disadvantages to a manual tuner other than you have to do the work yourself. Both manual and automatic antenna tuners give good results. They each have their place; which is "better" depends on who you ask.

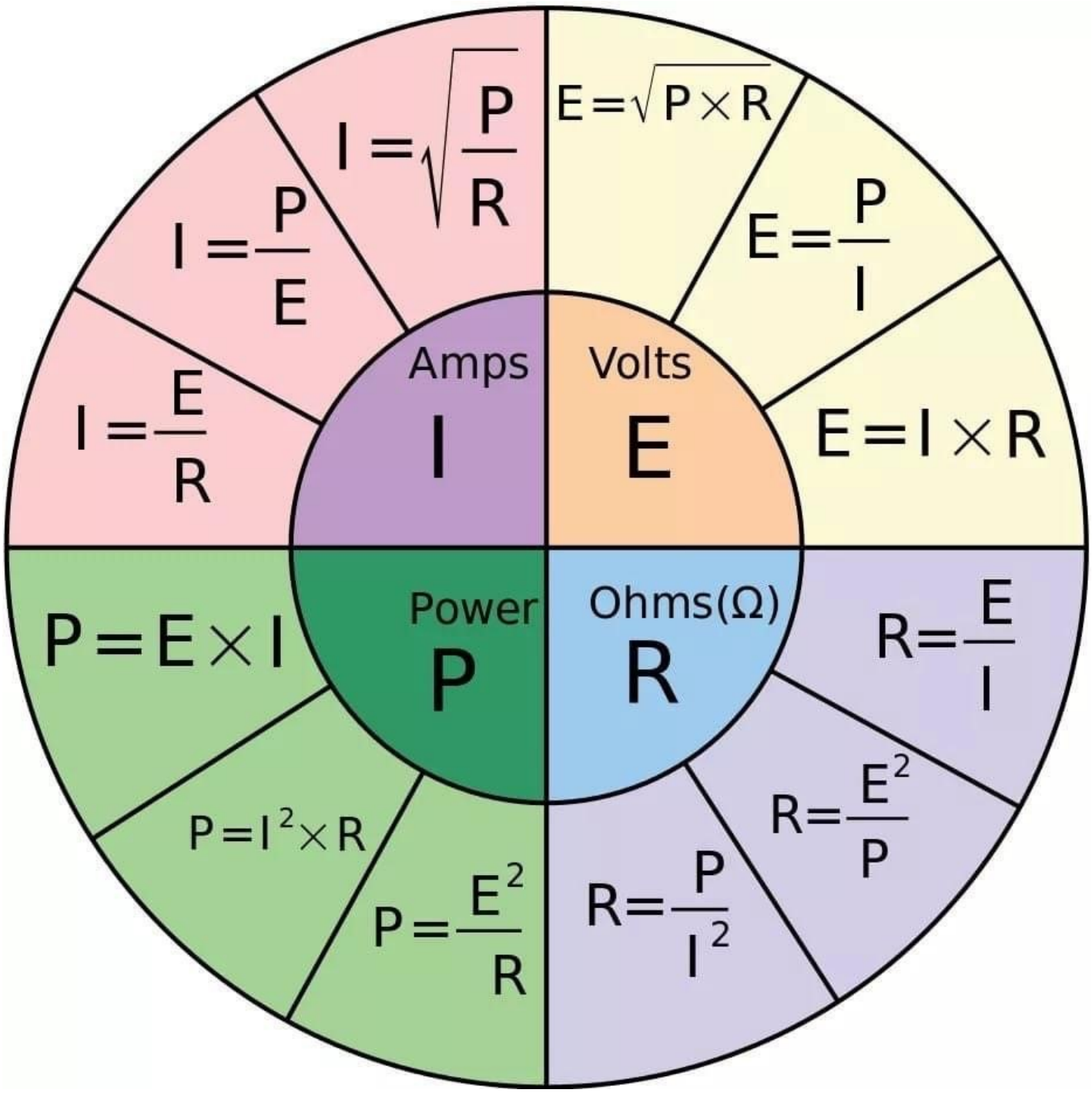
Elmering in The Park, October 1

Submitted by Michael, KN6HHW

Tim, N6DLC, teaching soldering skills. Always fun to learn new things!



Marco, KN6SJQ, with his new radio and portable antenna setup.



OHM'S LAW MASTER CHART

The Book Report

By Ken Campbell, N6PCD

Knowledge is Power. So said Sir Francis Bacon way back in 1597. And time has proven him right on every level.

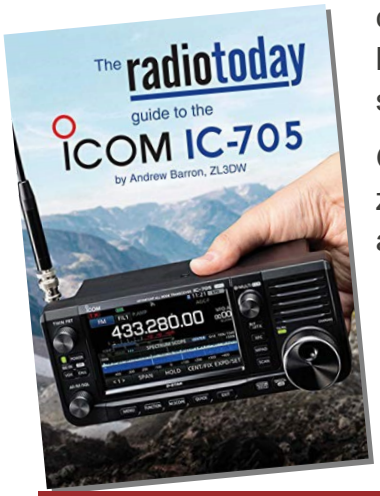
In our pursuit of the hobby of amateur radio, good books can help as we seek to improve our operating techniques.

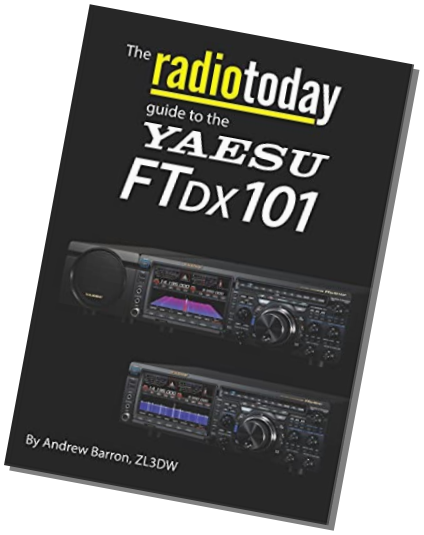
A series of books titled "The Radio Today" by Andrew Barron ZL3DW can be invaluable in understanding the ins and outs of your rig. I know, I know, there's endless videos on You Tube, but sometimes you need the information in front of you, in printed or digital form. Regarding You Tube, one can watch 4 videos and get five opinions.

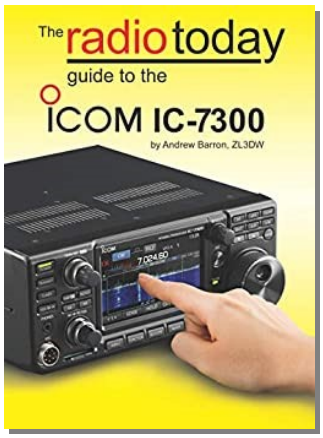
I personally have Andrew's guides to my IC-7300 and DMR. I consult both on a regular basis, and have then in both print and Kindle editions. DMR especially can be VERY confusing to newcomers. This guide takes it step-by-step, explaining both the hardware and the complexities of writing code plugs. Take it from me, code plugs are a whole other beast, understanding what to write and what order to write in is vital to making a working code plug.

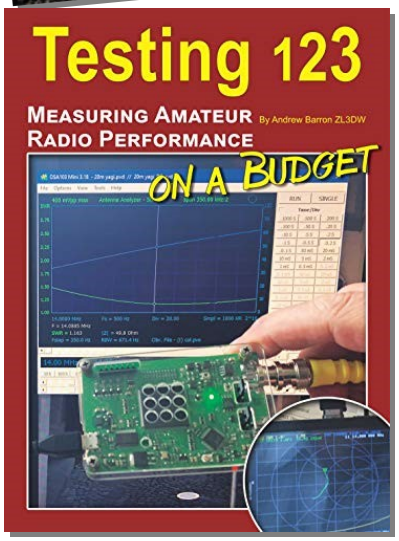
The hardware guides are equally well written and very useful, especially if you have a menu intensive radio like my 7300. It's saved me LOTS of head scratching time!

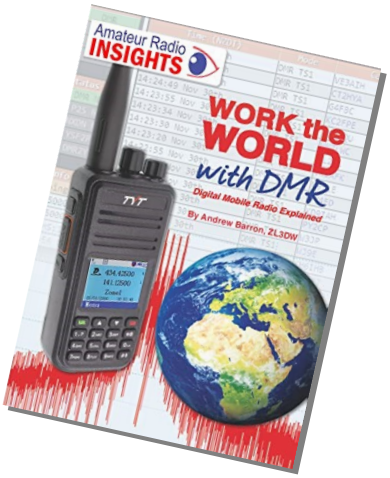
Give one a try. They are available on Amazon.com, in both print and Kindle editions, and most amateur radio shops.











Holiday Party 2022

Photos by Sheila Eure

KM6KNO

While we have a some quiet time now for the holidays, WOW, the Holiday Party at the Park was, by all accounts, a great success on Saturday. We even had a new member join the club so a warm GOTAhams welcome to Pauline White KM6JFE! We are looking forward to greeting Pauline on the club's nightly net.

The Grand Prize of $100 was won by member Garry Totten KE6CBW and the 2nd Grand Prize was won by Craig Borchardt KM6EIC. Congratulations to you both. Grace and Jack organized the gift exchange with 'theft features' and we had some merry gift-stealing along the way. Thanks to everyone for brining some great gifts. Jere KN6PED got robbed so many times we lost count - He surely ended up unwrapping more gifts than anyone at the event (Thanks Jere!). Fantastic food, some radio-activity and the weather cooperated. What's not to like? Thanks to EVERYONE who made this a success and, for those who could not make it, wait till next year! Thanks also to Club Treasurer Jack Sklar W6BZZ and to Member-At-Large Grace Clark K6FS for doing a fantastic job of organizing and planning the event.