Spurious Emissions

The Newsletter of the South Bay Amateur Radio Society

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SOUTH BAY AMATEUR RADIO SOCIETY
(SOBARS)
K6QM

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SOBARS is an ARRL-affiliated ham radio club with members from San Diego, National City, La Mesa, Chula Vista, Bonita, Imperial Beach, and San Ysidro, California.

OFFICERS

President: John Wright, K6CPO
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Call-Sign Trustee:
Jim Beckman, N6RSL
Emergency Coordinator:
John Lally, NB6P
Property Trustee:
Vacant

SOBARS meetings are held at the Chula Vista Fire Station 4, 850 Paseo Ranchero, Chula Vista, CA 91910
See the website for dates & times.

Club Repeaters:
146.085 (+) PL: 100.0
448.340 (-) PL: 100.0
Yaesu System Fusion®

CLUB NETS

Club nets are held every Tuesday evening on the following bands:
1830: (PT) 448.340 (-) PL 100.0
223.840 (-) PL 107.2
1900: (PT) 146.085 (+) PL 100.0
1930: (PT) 28.480 USB
7.240 LSB

From The President's Shack

By John Wright, K6CPO

We're into the last quarter of 2020 and there's still a lot more of the year left. 2020 has been an unusual year, to say the least. The Coronavirus/COVID-19 pandemic has put a burden on all of us. Amateur radio as we know it has changed .We've all had to learn a new software application, Zoom, and meet virtually.

The SOBARS board has endeavored to make the current situation as simple and as easy as humanly possible. If there is anything the board could do to make ham radio interesting and simple under the current situation please let us know.

As many are aware, amateur radio license testing in San Diego came to a screeching halt last spring when all the testing venues closed up. The San Diego Amateur Radio Council (SANDARC) decided to not get involved in online testing. Other VECS, including the Greater Los Angeles Amateur Radio Group (GLAARG) have implemented online testing with the approval of the FCC.

A couple of VES from SOBARS have become affiliated with GLAARG and are participating in online testing. If any members are interested in upgrading their licenses or know someone who is interested in taking a license exam, contact either myself or Fred Curtis, KI6GRO, the SOBARS Secretary-Treasurer.

Back in July, we began experiencing weak signal issues with the two meter repeater. We had no idea what was wrong until Fred Curtis, KI6GRO, had a friend fly his drone on the tower to look over the antenna and all the connections. It was discovered that the top four feet of the 2 meter antenna was missing. (It was later found on the ground next to the repeater building.) The antenna, a Diamond CP22E 2 meter gain antenna, had broken at a joint in the vertical element.

It was decided to replace the antenna entirely and a Diamond F22 2 meter antenna was purchased at Ham Radio Outlet. Thanks to Ed Flinn, WA6YVX, the old, broken, antenna was removed and the new Diamond F22 installed in it's place. This corrected the signal issues we were experiencing and both repeaters are currently operating as designed.

Yours truly took the old antenna home and attempted to repair it. After numerous attempts to remove the broken portion of the upper element from the antenna, I finally took a drill and drilled out the broken portion. I then trimmed off the ragged portion of the bottom element and squared it up with sandpaper. I then reinstalled it into the bottom portion of the antenna and drilled new screw holes.

I then installed the antenna on my telescoping flagpole and elevated to about 20 feet above ground. I then made checks on the antenna with an analyzer and determined the SWR was 1:1.2 at the bottom end of the 2 meter band and 1:1 across the rest of the band.

I then swept the entire 2 meter band on the antenna with my NANO VNA (more on this elsewhere in this issue) and determined the SWR curve to be virtually flat across the entire 2 meter band.

The antenna will be stored in the repeater building in the event we need it for a future use.

We continue to hold our meetings on Zoom as we have no indication when we might be able to start meeting in person again. The regular business meetings are being held on the 4th Monday of the month at 7:00 PM local time. We are also holding informal meetings on the 2nd Monday of the month at 6:00 PM. These meetings are open to anyone and there is no set agenda. I encourage all members to attend these meetings.

If you haven't signed up for the SOBARS group on Groups.io, I encourage you to do so. A lot of important information is being disseminated on the group. If you wish to sign up, contact Fred Curtis, KI6GRO.

This is all I have for this issue. Stay safe everyone and wear your mask. 73.

The Nano VNA

By John Wright, K6CPO

Not too lang ago, I noticed an increase in the number of posts on ham radio forums and YouTube about something called a Nano VNA. With some investigation, I discovered the Nano VNA was an inexpensive and compact Vector Network Analyzer (VNA.) A vector network analyzer is a piece of electronic test equipment with wide and far ranging capabilities.

I finally purchased a Nano VNA and started to learn it's capabilities. It can be used to measure antenna SWR, generate a Smith Chart of an antenna, and other measurements I haven't gotten into yet.

The average VNA can cost upwards of five figures, which places it well out of the reach of the average ham radio enthusiast. The Nano VNA is available from a number of sources at prices ranging from $35 to $100 depending on the source and the device's capabilities.

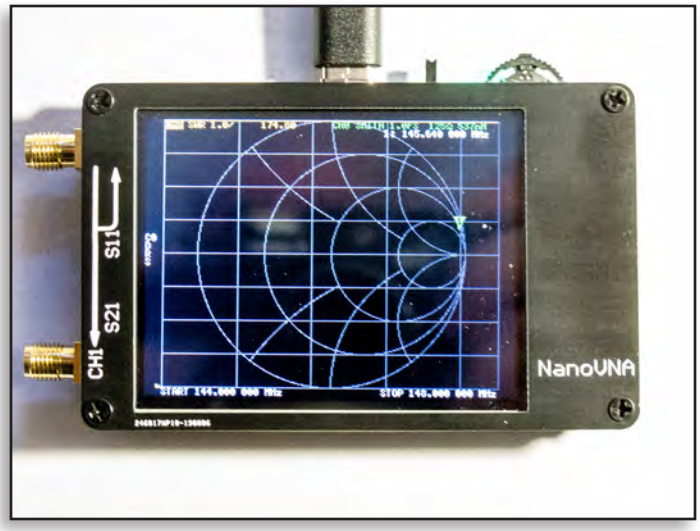
The Nano VNA is powered by either an internal battery or a USB C cable. The cable also allows the use of Windows software to control and read the device.

Here is a source for more basic information on the Nano VNA: https://nanovna.com/

One last comment... The Nano VNA is tiny by comparison to a regular bench VNA and it can be difficult to read the screen. If a purchaser has poor eyesight, there are versions with larger screens. A good magnifying glass helps...

What you get... This is what comes with the Nano VNA. Left to right: Calibration devices, Open, Short and Load. Double ended SMA connector, USB C cable and two connection cables with SMA connectors. Bottom is the Nano VNA itself.

John Wright, K6CPO



Closeup of the Nano VNA powered up to show screen but no signal applied. *John Wright, K6CPO*

Shelter, Water, and Food, Oh My!

By John Lally, NB6P, SOBARS Emergency Coordinator

Have you ever thought about what a diet and a disaster have in common? The odds are that each of them will reduce your caloric intake (although the former is voluntary and the latter is most likely involuntary). Additionally, articles and discussions regarding both a diet and disaster preparation are prone to speculation and conjecture. If you ask one-hundred people how to prepare for an emergency or disaster, the odds are you will get possibly more than one-hundred wildly varying answers. Each of us has our own thoughts, ideas, and suggestions but for the vast majority of the population, these amount simply to an OPINION! This may be true for even trained disaster preparedness professionals, as they are not immune to outside influences.

For many individuals and families, pop culture has skewed the mind-set on how to prepare. Television shows such as Jericho, Revolution, and The Walking Dead have each told us what steps are important to take, what items should you hoard first, and even what knowledge is significant. Although this author is not immune to the effects of this pop culture barrage of what to do, this article will use academic, industry based, and military research to provide sound suggestions on how families and individuals can prepare for the unexpected.

The first, and arguably the most important step for emergency and disaster planning is to determine which resources and actions are vital to your survival and which are bonus points. According to United States Department of Defense (DoD) guidelines, you should base your prioritization on the "Rule of 3's", which states that the human body can survive 3 minutes without oxygen, 3 hours without shelter (in harsh environments), 3 days without water, and 3 weeks without food. Although exceeding these limits may be possible, in most cases, there is a high probability it would result in physiological damage to the individual.

While most disaster planning cannot provide for an adequate long-term supply of oxygen, the other necessities can be provided for. Based on the rule of 3's, the next highest item on your hierarchy of needs should be ensuring you and your family have a suitable shelter to protect you from the elements. If a designated public emergency shelter is unavailable or lodging with friends or family outside of the disaster zone is not an option, there are many ways to provide shelter from the elements. If funds allow, the purchase of a reasonably well-constructed three season tent may be an option, for those without the spare funds, a few well-constructed tarps, 50-100 feet of Para chord, and a roll of duct tape can be used to shield you and your family from the elements. Although you do not have to buy the highest rated tent on REI's website, you get what you pay for and if it leaks or tears, it will only make your situation that much more uncomfortable.

Our next stop along the rule of 3's is to ensure you and your family have an adequate supply of safe water. The most common "rule of thumb" regarding emergency food and water is derived from the Federal Emergency Management Agency's (FEMA's) vague guidance of three days of food and water per individual. The three days guidance is derived from FEMA's goal of being on site within 72 hours of a declared disaster, though if you ONLY have the three days' supply then you and several thousand of your closest friends can wait in line at a food and water distribution site. For those with the ability and resources to acquire and store emergency supplies, I would personally recommend a goal of at least two-three weeks' worth of food and water, this is based on a review of FEMA's major incident responses over the last 15 years (since the response to Hurricane Katrina).

Whether your goal is three days' supply or three weeks' supply the actual amount is still vague, according the Centers for Disease Control (CDC), the rule of thumb regarding how much water is required was one gallon per person per day. This allowed for drinking, cooking, and hygienic needs. Recent research by the University of Missouri (U of M) expands the CDC guidance and takes differences in an individual's make-up, their level of activity, and other differences such as if the individual is currently pregnant or nursing. Based on the U of M research, a baseline amount of water an individual needs (for consumption only) is to divide their body weight by two and the resulting number represents the number of fluid ounces required to maintain proper bodily functions. In addition to this baseline amount, for every half-hour of heightened activity an additional 12 fluid ounces should be added to the baseline and if the individual is currently pregnant or is nursing a child, that individual's baseline should include an additional 24 fluid ounces. So, based on these numbers, a 120 pound female who is currently nursing and is spending 3 hours a day combing through the rubble of their collapsed home would need 132 fluid ounces per day while a 220 pound male performing the same

level of activity would require 158 fluid ounces per day.

We've discussed oxygen, shelter, and water, now for the meat and potatoes (pun intended) of our discussion. When you plan for your families emergency food supply, there are a few requirements you should take into consideration. How much food should you plan on storing? As like water, this is based on an individual's make up and their level of activity, but where water requirements are based on fluid ounces, food requirements should be calculated based on calories, NOT servings.

To calculate the proper amount of food to store for your family, you must first calculate the "Base Metabolic Rate" (BMR) for each member. There are several online BMR calculators to assist you with this step of your emergency preparations. An easy to use online BMR calculator can be found at (https://www.bmi-calculator.net/bmr-calculator/). Since these BMR calculators are found online, it is important to do this in advance and update your findings as needed. Once you have the BMR for each family member, multiply that number by 1.55 for an average activity level, and 1.725 for more heightened activity level. By using the adjusted BMR requirements, you can more accurately determine the number of calories each family member needs per day and prepare accordingly.

Other considerations regarding emergency food stores are to store foods that your family will actually eat, you can store all the food in the world, but if your children don't like it they won't eat it. Besides taste, other considerations include ease of storage; nothing which requires refrigeration or freezing. Ease of preparation; you should strive to have your emergency food to be prepared in a single pot and have as few steps as possible. The final consideration for emergency food is packaging; in the event you need to relocate, you may not want to deal with large numbers of canned goods or items stored in breakable containers.

Though this list is detailed, it is by no means all inclusive; required medicines, unique dietary needs, and other individual necessities should always be taken into consideration when making emergency preparations. Only you and your family can decide on what preparations work best for you, as such the most successful family preparations are those which the whole family are involved in planning.

Deciding on emergency stores and preparations doesn't have to be an intimidating process, if anything as you begin to prepare you should become less stressed regarding the unknown. As anyone who has attempted a New Year's resolution knows, the first step is always the most difficult. Every household is unique and no plan prepared by an outsider can hope to fully cover your household completely. As with all matters pertaining to safety and survival, it is critical for YOU the reader to continue to research various aspects of disaster planning and preparation to develop a plan suited for you and your household. The information I've presented here is just a starting point and is based on my opinions and experience; as such they should NOT be taken as the ONLY sources of information available to you. There are large amounts of FREE information available from governmental and recognized non-governmental sources. You shouldn't buy a car, a laptop, or other high value items based solely on one source of information. Is there anything more valuable than your life and the lives of your loved ones? Do your homework, lives WILL depend on it.

Suggestions or request for future article topics can be made to NB6P@arrl.net

Links to help design a household disaster plan:

www.ready.gov

www.fema.gov

www.redcross.org

www.militaryonesource.mil

www.readysandiego.org

www.usa.gov

**The information contained in this article is the opinion of the author based on their experience and education. As such it should not be substituted for proper research by the reader.*

**The listing of any venders or websites does NOT imply a referral or an endorsement of any sort and are used only as examples.* ↯

Installing A Battery Maintainer IN My Truck

By John Wright, K6CPO

One of the consequences of the Coronavirus quarantine has been the toll it has taken on our vehicles. Personal vehicles are designed to be driven regularly and enforced idleness is detrimental the their condition. Not being driven can have an adverse effect on tires (flat spots), engine (sludge formation from moisture) but most of all on batteries.

I discovered this the hard way shortly after the imposition of the stay-at-home orders. I went out to start my truck and nothing. I broke out my old battery charger and hooked it up. After two days charging, the battery was still dead. Time for replacement...

I bought a new battery, installed it in the truck and everything was fine. However, I wasn't driving at all and if I didn't take steps, I'd just destroy another battery. I came up with the idea of hooking the truck up to a trickle charger to keep the battery up, but having no garage, I was concerned with things like the charger being stolen.

I envisioned installing the trickle charger somewhere inside the engine compartment of the truck with an external connection for the power. I didn't like the idea of a plug hanging out in the weather so I started looking for some kind of external receptacle I could mount on the body of the truck.

I found just the thing on Amazon. It was a NOCO GCP1 15 Amp 125V AC Port Plug Power Inlet. I have used NOCO battery chargers in two of my Go-Kits and find them to be very well made and reliable.

For the trickle charger, I chose a Schumacher 1.5A 6 and 12V maintainer. Schumacher products are well made, reliable and inexpensive, I was able to find one locally.

It was a simple matter to drill a two inch hole for the receptacle and mount in a convenient location on the fender just forward of the driver's door. (Figure 1)

The charger was another matter. I wanted to mount it in the fender well away from the engine, but the size of the charger prevented it. There was also no way to mount the charger to the interior fender well. Instead, I stuck it to the top of a fuse box with double sided tape. (Figure 2). My concern was I wouldn't be able to close the hood but there was enough clearance.

While not being an ideal solution, it solved the immediate problem of the battery discharging while sitting idle.

After giving the matter more thought, I became concerned that this particular charger had no protection from the charging voltage of the alternator while the truck was running. Numerous e-mail requests tot he company regarding this went unanswered so I started looking for a different solution.

With a little internet research, I discovered my old friends at NOCO made a line of devices designed for just this purpose. I chose the NOCO GENIUS2D, 2-Amp Direct-Mount Onboard Charger, also available on Amazon.

The NOCO charger was perfect for this installation. It was less than half the size of the Schumacher charger and came with it's own snap-in mounting bracket. I was a simple matter to remove the Schumacher charger, drill a couple of holes in the engine compartment sheet metal and mount the NOCO. (Figure 3.)

Now all I have to do is unplug the extension cord from the exterior receptacle and close the cover and I'm ready to go. When I return, I open the cover and plug the extension cord back in and the battery stays charged. Anybody need a lightly used 1.5A trickle charger?

Figure 1: NOCO receptacle installed in fender.

John Wright , K6CPO

Figure 2: Schmacher trickle charger installed in engine bay.

John Wright, K6CPO

Figure 3: NOCO charger installed on fender wall.
John Wright, K6CPO