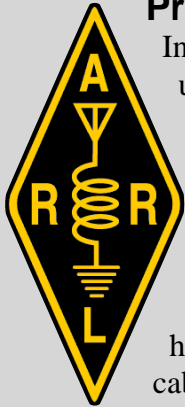


May 2011



### President's Message



In April I went up to British Columbia for the month and used APRS for Regina and others to follow my trip. I used a Kenwood TH-D7 and a GPS receiver. If you are interested in APRS, check out <http://aprs.fi> It was a fun thing to do while doing the 23 hour drive. It followed me all the way to my island property. While there, I set up an old Swan 350 on a G5RV but did not reach Southern California as conditions were not favorable. I had to run it on a generator as I have no power to my cabin so had to limit how long each day I had it on.

Other travel news was heard from Bill K6ACJ who is in Madrid, Spain; he sent along a picture of his QRP Station and reports he made 12 contacts using this Elecraft QRP rig that has 20 to 40 Meter ability.



*Peter Reinzuch VE7REZ*



Bill will be returning for the club event, the Potluck picnic/Campout this weekend in the desert. Our 2nd in the Desert Event;

check out the events page on our web site to see where to attend. If you don't think camping is your thing, come on Saturday for the Potluck Picnic and see our Rhombic Antenna setup. It is likely the longest loop antenna you'll ever see, running about 700 feet. This is a Military antenna provided by Michael Brennan's from his collection. Your whole family is encouraged to attend. We will be having a horseshoe pitching contest for those not into our radio setups. We hope to do some long distance communications around the world with our setup. Come try it out for yourself. There are no services at our Desert Dry Camp so bring everything you will need,

including chairs. Come anytime Saturday; the Picnic is scheduled between 12 noon and 3 PM to give you plenty of time to get home before dark. The map to the Potluck Picnic/Camp location is at <http://desertrats.am/newsandevents.php> Setup will be on Friday so if you plan on RVing or camping and can make it there in the afternoon, come give us a hand. I'll be there about noon Friday till Sunday as will other RVers in the Club. Take Hwy 86 then Hwy 22; we will be at about the 3 mile turnoff. Turn left and look for our RATS Banner strung up on the covered Picnic table. Talk in will be on 146.520 or phone me at 760-318-0186 if you need any information.

Next Club Meeting will be on May 16th; we will discuss this years' Field Day to be held on June 25-26. Again we need some volunteers to help and I hope to see you then.

Some members have been quietly working on a multi repeater project and may be ready to make an announcement about that at the meeting. This will be quite the setup when it is operational.

Our Guest Speakers will be from the Microwave Society in San Bernardino; should prove to be very interesting. See you then!  
73 Peter VE7REZ

## ALC - Friend or Foe?

ALC is abbreviation for Automatic Load (or Level) Control and the first time most hams are confronted with the term when they get their first HF rig. Their radio usually contains three meter settings for transmit showing – Power, SWR and ALC. If the ham has owned a VHF radio they may (or may not) understand the power and the SWR readings. ALC is less understood and, unfortunately, often ignored.

Since the carrier is suppressed on SSB, and unlike FM, the power of an SSB transmission varies as you talk. The power output meter indicates the average power that you are putting out. It usually does a poor job since it is unable to track the rapid level changes of the human voice. As a result, the power meter will only show maximum output when you transmit a constant tone or carrier. For the rest of the time it will bounce around showing an average that is usually around 35 watts or lower.

It is the job of the ALC circuit to reduce the gain of the transmitter on speech peaks to prevent it from producing more output than it is designed for. The ALC meter is actually showing a negative voltage that is being applied to reduce the overall gain of the transmitter. Each model of transceiver has different ALC characteristics that include things like, at what power level does the ALC start to cut back the gain, how quickly does it cut back the gain (the attack) and how slowly does it return the transmitter gain to normal once the loud voice peak finishes (the decay).

Most ALC circuits have a relatively rapid attack and a slow decay. The gain is typically reduced at power levels above 50 watts. While the ALC circuit in some older tube radios sometimes allowed for a little headroom, e.g. 120 watts, the upper limit of 100 watts in modern radios seems to be a 'brick wall' that cannot be exceeded.

## HYPERLINKS

[Desert RATS Website](#)

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[Riverside ARES](#)

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## CALENDAR

**May 13<sup>th</sup>, 14<sup>th</sup>, & 15<sup>th</sup>, 2011**

**Desert RATS Camp & Picnic  
Ocotillo Wells • Salton Sea**

**May 17<sup>th</sup> 2011**

**Desert RATS Meeting 7pm  
Palm Springs City Yard  
Conference Room - Guest  
speaker: Dennis Kidder,  
W6DQ from the Microwave  
Society - Subject: A Special  
EME from the Owens Valley**

**June 21<sup>st</sup> 2011 - Tentative**

**Desert RATS Meeting 7pm  
Palm Springs City Yard  
Conference Room  
Guest Speaker from AMTV**

**June 24<sup>th</sup>, 25<sup>th</sup> & 26<sup>th</sup> 2011**

**Field Day at Angel View Facility  
Desert Hot Springs**

**July & August • No Meetings**

**September 20<sup>th</sup> 2011**

**Desert RATS First meeting of  
the Season 7pm • Palm Springs  
City Yard Conference Room**

## Friend ?

When talking normally on SSB, a little ALC indication can be considered a good thing – its shows that you're getting close to the rated output of the transmitter. Since different radios have different ALC characteristics, it is best to consult the manual for the correct settings but most radios have meters that have a stripe on the bottom showing the acceptable ALC range. Watch the ALC rather than the power out meter when transmitting. Keep your mic gain set so that the ALC stays in the lower 50 % of the range for most of the time with occasional peaks into the top half of the range and your audio (and signal width) should be acceptable. If your mic gain is so high that you exceed the ALC range, your signal will be distorted, wider and more difficult to copy.

## Foe?

The rules for PSK are different than with regular voice SSB. Since many PSK users all occupy the same narrow segment of the bands, the PSK signals must be as narrow as possible. ALC action makes the transmitter non linear and therefore, by definition, causes distortion and increased signal width. While a little distortion is acceptable on SSB it is NOT on PSK. The best way to configure your radio for PSK is to avoid using ALC:

- Set the power control (or menu) on the radio to MAX – yes MAX (usually 100 watts).
- Adjust the mic/data input gain on the radio along with the sound card output slider on the computer to the point where there is a small amount of ALC indicated on the radio.
- Reduce the sound card output or mic/data input gain slightly until there is no longer ANY ALC indicated on the radio.

Once set, any increase in audio level from the computer to the radio or reduction in the radio's POWER setting will cause ALC action or distortion.

PSK is very efficient in terms of the signal to noise ratio that can be achieved at the receive end compared to the originating transmitter power. Most people run around 25 watts. The technique above will result in a transmit power in the 20 – 45 watt range for most modern HF rigs.

**Richard Saunders, K6RBS**

## Basic Tools for the Shack

**Glenn Morrison WB6RLC**

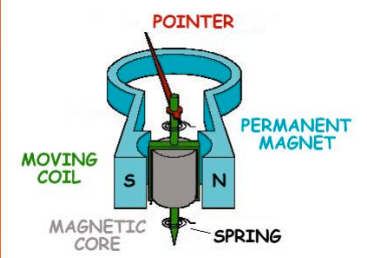
One basic tool that every Ham should have is the shack is a hand held multi-meter. You can also use it around the house to troubleshoot electrical problems as well as automotive issues.

There are 2 basic types of meters. The first is just commonly called a multi-meter and the other a digital multi-meter or DMM. Both do about the same job and both have some advantages and disadvantages. Both meters will measure DC and AC volts and current. Both will measure continuity and ohms.

The older multi-meter has a mechanical movement at its heart called a D'Arsonval meter movement.



Glenn WB6RLC



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Monday Evening Net  
Newsline • 6:30 pm

Regular • 7:00 pm  
146.940 PL 107.2

ARES Digital • 7:30 pm  
144.435 Simple



An electromagnetic core with a coil is suspended between the two poles of a permanent magnet (see the Figure). The current flowing through the coil moves the pointer up scale. Everything coming into the meter is scaled through a resistor network then changed to a DC current (AC makes the needle blur), then it's displayed in the units wanted/selected on the dial. A battery supplies the current to measure ohms.

Look around your shack. How many of these do you see? The S meter on your transceiver, for one. How about a SWR or power meter? They are of course an analog type meter. These have some advantages around RF. They are much easier to use when tuning or peaking a circuit. Remember digital Speedometer in cars? Yeah, those didn't last long. It's just easier to peak something up. Also they are less susceptible to stray RF. Once, while working on a sailboat in Newport Beach, I wanted to check the battery under load. I put my digital meter on the battery terminals and keyed the marine SSB transceiver. The meter jumped *up* in value from 12VDC to 15VDC. RF caused the meter to give a false reading. This has happened to me several times between my different careers and Ham radio.

The disadvantages are that you need to be a little careful. If you do not have the meter set to the proper scale you can "wrap" the needle. Literally, bend it around the post at the far end of the scale. Also, the older meters and the less expensive new meters have a low input resistance. This can load down a sensitive, high gain circuit you are working on, giving false reading. Newer, better meters have transistorized (FET) inputs with a high resistance input that eliminate this problem. This is listed as Ohms/Volt. An older meter may have an input resistance of 10K ohms/volt, while a FET input meter may be 10M ohms/volt. Although these are pretty rugged meters, a really good jolt can dislodge the needle from its jeweled pivots.

The new (relatively, for some of us) digital meter are a real blessing. The Digital Multi-Meter does it all. It's easy to use and just about fool proof. In a nut shell, every thing goes through an ADC (analog to digital converter). It's then digitized, scaled and displayed in proper units for you. About all you have to do is select AC, DC, Ohms etc and you are good to go. They also have good built in overload protection.

The better meters (as my venerable Fluke 87) do much more than just measure volts, current and resistance. Many

now will measure frequency (up into the MHz range) and duty cycle. Most now can also measure capacitance. All DMMs have a built in beeper for continuity testing and a setting for checking diodes and transistors as well.

Not that it makes a real difference in you average shack, but of course the DMM is at least 10 times the accuracy as the old D'Arsonval movement.

Along with the usual retail places check out: <http://www.newark.com/jsp/search/browse.jsp?N=1003096+500003> & [http://www.mouser.com/Test-Measurement/Multimeters-Voltmeters/Digital-Multimeters/\\_/N-5gfg/](http://www.mouser.com/Test-Measurement/Multimeters-Voltmeters/Digital-Multimeters/_/N-5gfg/)

You may just want to go to their home page and put in handheld DMM into their search engine and see what you get. Don't let the specs frighten you. You don't care if the AC accuracy is 0.01% or 0.001%. This ain't Aerospace! Get what you can afford, but everyone should have a good meter in the shack.

These 2 are also super sources for all electronics parts. I have no interest with either of them, other than having used them for decades on a professional level.

If you have a tech question or topic that you'd like to have me discuss, email me at: [ticntoc@speakeasy.net](mailto:ticntoc@speakeasy.net).

Also, I enjoy restoring old tube gear and getting back on the air. If you have some old stuff around the shack (no, not the XYL) that you'd like to sell, let me know. See ya on the bands.



**Susie Boskovich KD6TVO**

## Tidbits

It is with sadness that I report that Leo Meyerson, W0GFQ, passed away on April 12, 2011. We had just attended his 100<sup>th</sup> birthday celebration. He is known for his internationally contributions to Amateur Radio. Our local QCWA (Quarter Century Wireless Association) is the Leo Meyerson Chapter. Wednesday, May 11, 2011 there was a memorial for the local hams at Palm Desert Greens. Leo will always be remembered as "Mr. Ham Radio".

Many of the snow birds have left the desert for cooler weather. We

wish them all a pleasant summer and look forward to their return in the fall.

A few members have not renewed their memberships. If you are one of them be sure to send in your dues for the 2011.

If you know someone that is not getting the newsletter, please let us know and double check their e-mail addresses. A few have been returned.

Our May meeting will have Dennis W6DQ from the San Bernardino Microwave Society as our guest speaker. His topic... "EME on 40 Meters"

Have you ever wondered what it would be like to be a "Big Gun" station? Especially on Moonbounce? Members of the San Bernardino Microwave Society were recently given this opportunity - to put a 130 foot dish antenna on EME. This presentation describes how this came about, what it took to make it successful and describes some of the other benefits that came from this project.

Dennis was first licensed in 1969 as

WN6NIA. That quickly changed to WA6NIA when Dennis picked up his Advanced Class license. Ham radio launched him into a career in engineering, working on many different projects over the years - from publishing newspapers, to building and operating concert sound systems, systems that fly spacecraft and even building airports and air traffic control systems. Dennis approaches ham radio in the same way -- trying to experience all that makes ham radio what it is. Moonbounce is but one stop along the way. *Glenn Morrison WB6RLC*

## Advertisement



**Duane Heise, AA6EE, an ARRL & Callbook distributor, is offering the Callbook 2011 Summer Edition CD for \$6.00 off the**

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## Renewable Emergency Power for your Emcomm Station using Solar Photovoltaics

“When all Else Fails” is the motto of the emcomm volunteer. What happens when the power fails too? Be ready to make your own electricity!

Not always will we be sitting in a nice air conditioned building with all the electricity we need to power our equipment. In a real disaster it will be very likely that the power will be off line. Our vital communications gear is useless without a good source of reliable power with sufficient current available to drive those radios. In order to get that signal out, most radios require current on demand and plenty of it.

**Evan De Rouen KI6WNF** Our alternatives are Batteries, Gasoline or Diesel generators, HHO (Hydrogen) generators, and Solar Photovoltaic. Generators that utilize a fossil fuel source are effective in creating electrical energy. They have been in use for years and are the ol stand by when it comes to emergency power. Internal combustion generators do have their drawbacks. The first and most obvious is the fuel, what happens when its gone? No more power! Second is what happens if it breaks down? Lots of moving parts are a liability when it comes to reliability. Who has the time and expertise to fix a broken engine during a disaster? These types of generators are ok, but I think they should be used as a supplement instead of the go-to.

In our valley we have more solar energy fall on us than almost anywhere else in the country. Why not use this abundant and renewable resource to feed our current hungry gear? For less than the cost of most decent generators you can design and build a solar fed battery backup system for your station or emcomm go box. In this and the next few articles I will explore how both batteries and Solar PV can provide ample power to your equipment in the event that the grid goes down.

First thing to consider when designing your solar system, is what voltage the battery system needs to be. Most of our equipment will run on 12v DC, that’s what you should base your load calculations on. Batteries come in many different sizes, voltages, and capacities. It is important to calculate how much current is needed to run ALL of the equipment you will need. (transceivers, laptop, amplifiers, TNC, etc.) Once you calculate that number you are ready to go battery shopping. The formula for determining the total watt hours for proper battery sizing is:

$\text{Load Qty.} \times \text{Volts} \times \text{Amps} = \text{WattsDC} \times \text{Use (hrs/day)} \times \text{Use (days/week)} \div 7 = \text{watt hours DC}$

Once you have the load watt hours you are ready to size up your battery bank:

$\text{DC Avg. Daily Load (watt hours)} \div \text{DC Voltage (12v)} = \text{Avg. Amp Hours per day}$

Determine the amount of days you can go without sun for recharging the batteries. For our area I suggest this number to be 2 or 3 days. It is uncommon for us to have cloud cover lasting longer than this. This value is referred to as the “days of autonomy”. Most battery manufacturers will provide you with a discharge limit for their products. For our purposes here we will use a limit of 50%. The remainder of the battery bank sizing calculations goes as follows:

$\text{Avg. Amp hrs/day} \times \text{Days of autonomy} \div \text{Discharge Limit} \div \text{Battery AH Capacity} = \text{Number of 12v batteries wired in parallel}$

This should give you a basic understanding of how many batteries you should buy. Use deep cycle AGM, or lead acid types. Most off the shelf wallyworld batteries are not sufficient amp hour rated batteries and should be avoided. Shop online or find a battery specialist to get the most bang for your buck. Dekka makes reliable products here in the USA <http://www.dekabatteries.com/>.

Next issue I will cover proper PV array sizing for charging your battery bank. As you can see its not that complicated if you have the right formula, and designing this system will give you the satisfaction of being a smart and “green” ham. You are on your way to being self sufficient and prepared for the big one. Till next month 73 KI6WNF.



**Gene Swiech WB9COY**

Many thanks, to Gene Swiech (WB9COY) for his excellent presentation on D-STAR “The next Generation”.

The Unlimited Potential of D-STAR (Digital Smart Technology for Amateur Radio).

It was in 1901 more than a century ago that Marconi succeeded in the first Trans Atlantic telegraph communications. Even after that historic experiment, it has been the Radio Amateurs that have been pioneering the advance in radio communications.

Now amateur radio is evolving into the digital communication, or the D-STAR era. Born in Japan by the JARL, it is opening the door to a new world of Amateur Radio. D-STAR allows simplex communications as well

as communication for repeater as with analog radio. D-STAR’s most outstanding feature is the system optimization with the internet. When a transmission from a terminal radio reaches a D-STAR repeater it will be relayed to a specified destination repeater with gateways according to the specified settings on the radio terminal. This station may be next door, next city or even a different country.

Since D-STAR uses the internet, constant and stable communication is always possible regardless of the distance between you and the other radio station. Such Gateway relay D-STAR repeaters are deployed worldwide and are growing rapidly.

Let’s discuss the fantastic futuristic features of D-STAR. The only requirements are a D-STAR compatible radio a conventional antenna system and computer equipment. Enjoy casual, local or worldwide communications anytime. The crystal clear voice quality of the digital modulation is the other attractive feature of D-STAR. Even distant oversea stations sound as though they are right next door. There is no annoying noise as with analog FM as the fringes of the communications range. In addition to the voice communications digital voice mode the text data may be sent simultaneously as slow data traffic. The data dedicated digital data mode enables Ethernet compatible one with a 28kpbs data communication.

Currently D-STAR operators are enjoying the latest D-STAR application of GPS position data reporting. With a D-STAR radio and GPS receiver you can see your position exchange the information data with other stations and see their position data on your radio display. Stations can be displayed on a map on a computer screen when mapping software is used. The GPS feature can be a useful function not only to inform other stations but for example rescue teams in the event you get lost.

The fast digital mode is compatible with internet protocol, therefore, most current applications like web browsing and email can be used with D-STAR. D-STAR’s has limitless possibility of applications developed by Amateur Radio Operators will further enhance the enjoyment of this system. For example Position Reporting Systems using Google Earth or chat rooms over the D-STAR network are just some of the potential ideas that can be put into reality.

As the D-STAR repeater system can be relatively easily installed, many Amateur Radio Groups have installed the network by themselves already.

Everything we know of is going digital and despite being a Century old Amateur Radio is no exception. D-STAR was born for radio Amateur Operators and is being grown by Amateur Radio Operators and further evolution and expansion of Marconi’s experiment over a century ago continues to grow by Amateur Radio Operators. *Tom McLean KJ6DZT*

## **Both D-Star and Analog Repeaters Continue to Grow Thanks to the PAPA System Members**

Several weeks ago Doug – K6JV agreed to add his Palm Springs Edom Hill D-Star K6IFR repeater to the PAPA System D-Star family of repeaters. With this addition, the PAPA System has nearly duplicated the systems analog coverage with D-Star, giving the PAPA System one of the world’s largest D-Star largest foot prints. The PAPA System member would like to thank Doug K6JV for his help in making the System SIMPLY the Best in the World.