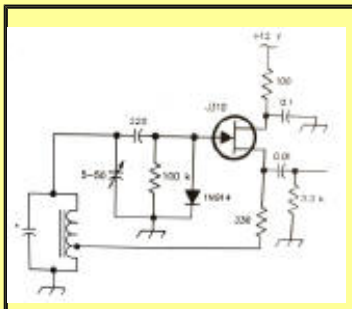
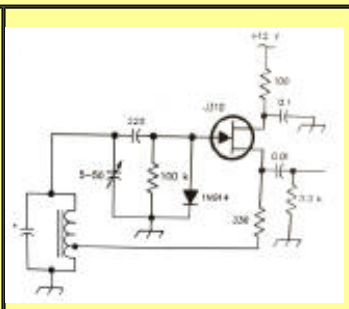


Local Oscillator



2009	Mesilla Valley Radio Club	June

A pdf file of this issue is available. It should print fairly easily. If you do not have the free pdf file reader, go to http://www.adobe.com

Coming Events

Date	Event	Time
Sun	Slow CW Net 3.575	3:30PM
Sun	CW Net 3.375	4:00PM
M - F	6 m FM net 52.540	6:00AM
T, T	Informal meet Wal-Mart (E)	10:00AM
M, W, F	Informal meet Wal-Mart (W)	10:00AM
Mon	WTRA Swap net 146.88	8 PM
Wed	N5BL Net 146.64	6:45PM
June 6	Breakfast - Club House	8 AM
June 6	Business - Club House	9 AM
June 10	Board meeting - Club House	7 PM
June 16	Builder's Group - Club House	7 PM
June 27 - 28	Field Day - Club House	
Aug 14-15	Duke City Hamfest	
Sept 5	Alamogordo Hamfest	
Oct 3	Pecos Valley ARC Swapfest	

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COMING EVENTS
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CLUB NOTES
FIELD DAY
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NVIS ANTENNA

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The space below is used for acknowledgements and maintaining the site.
Send comments, suggestions, and requests to Alex. F. Burr or send e-mail to aburr @ qzxservices.com.
Technical assistance, net access, design, and maintenance provided by **qzxservices.com**

2009	LOCAL OSCILLATOR	June

THE ARTICLES FOR THIS MONTH

PRESIDENT'S CORNER
KC5HFJ

The usual breakfast and business meeting will be held June 6
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CLUB NOTES
KD5SSJ
None received
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FIELD DAY

As far as is known now there will be an informal field day at the club house. Some people have expressed an interest in operating most of the night as well as during the day. There might be more information on the n5bl.org web site. There might be food at 6 PM.
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BUILDERS GROUP
KD5SSJ

At the last meeting we discussed what to do next. A lot of ideas were kicked around. Eventually, there seemed to be interest in a couple of things, QRSS (very slow speed CW used for weak signal work) and instrumentation for the shack (field strength meter, power and voltage meters, etc). After more discussion, a project that might serve all of these in some way or another, microprocessors. Finally, some specifics were discussed and a decision to adopt the Arduino http://www.arduino.cc/ as a platform to use for teaching and experimentation.

I was first introduced to the Arduino at the Austin

SummerFest (hamfest) almost three years ago. One fellow in particular was so excited about the project that he purchased a bunch of kits and was giving them away. We did a little trading, one of my solder paste syringes for one of his Arduino kits. I came home and built it and played a little bit but I really didn't do much else with it at the time (I had several other microprocessors to play with). The MAKE Magazine regularly features articles and projects based on the Arduino. There are now many variations of the basic hardware but the firmware development tools have become more sophisticated and easier to use. Lots of example projects and resources are available, and best of all it's almost free.

There will be those that want to get fully involved in this project and you are going to end up buying some hardware, for those that are interested in seeing what you can do we have a couple of demonstrations that will hopefully let you see it in action.

Think of it as a Ham related Adult Education program with no tuition, no outrageous text books and if you want one of your very own Arduino boards to experiment with, a very modest lab fee, $50 to $100, and everybody learns something.

I am not proposing that the Builders Group become all Arduino all the time but we will learn enough about it to setup a project and know how and where to proceed.

How does this tie into QRSS for instance? AA5CK http://www.aa5ck.com/iduino.html has some documentation of how he is using the Arduino and some of his weak signal work. In this discussion he mentions a couple of local Hams WA5DJJ, Dave Hassall and KC7VHS, Perry Steinman. One graphic shows WA5DJJ received with perfect copy in Australia using only 900mW. Dave does this routinely and also Europe.

On Tuesday June 2 there was demonstrated a DDS based QRSS controller based on one of my kit boards and the Arduino microprocessor board. In case you're not familiar with the acronyms, DDS stands for Direct Digital Synthesizer which can produces a sine wave from below audio frequencies and continuously through 6m (DC to 60MHz) and QRSS weak signal very slow CW beacon.

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STORAGE BUILDING UPDATE
AD5LJ

We had another work day on Saturday 17 May. We managed to complete painting the outside walls and the front doors. The building is finished except for some caulking and construction of shelves inside. I would like to thank the following for their outstanding work: George KD5OHA, Ron KE5KLK, Al K7ICW and Dennis KB5TPV.

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NVIS ANTENNA STUFF
KI5FJ

Shakespeare, the entertainer, was once quoted by Marconi, the radioman, as stating "A good aerial is one of the most important things in life". Well maybe not! In any case, I was asked to prepare some "How To Build" instructions for a Near Vertical Incidence Skywave (NVIS) aerial or antenna..

What follows is more like a story than simple instructions.

The first consideration is how much land is available. A 100 Ft by 20 Ft would accommodate a Marconi type antenna, a design similar to the new 80,75,60,40 & 30 Meter antenna at the MVRC club house. The Marconi type is a ground mounted and fed antenna. This could be an inverted L design. Horizontal wires low to the ground 10 to 15 Ft are adequate.

B. 200 Ft by 20 Ft would accommodate a hertz type of antenna

for the same bands. The hertz type is a dipole design. The same 10 to 15 Ft height is desired.

C. 70 Ft by 70 Ft would accommodate a low to the ground horizontal loop Antenna.

The second consideration is how much cash is available.
A. Unlimited finances could allow a remote automatic antenna matching box (ATU). This ATU and a single non-resonate wire can be matched for the NVIS bands.

B. Very limited finances, a two band, specific frequency per band solution is easy.

C. Somewhat limited finances, and the builder desires to cover all NVIS bands a Multi-wire resonant system is a good approach.

The third consideration is impedance matching. An impedance matching device either internal to the transceiver or an in the shack external (Manual or automatic tuning) is a necessity!
The club's TS-570D transceiver has an internal ATU. I was prepared to back this up with an home brew manual ATU if necessary.

Construction of the inverted L NVIS antenna started at my home QTH.It was designed to fit the available space at the clubhouse. 15 ft high wires, high enough to clear the shed, would fit in East-West plot of 100 ft by 20 ft.

I recycled a 2-inch by 7 ft length of steel pipe. It was previously encased with 18 by 10 inches of concrete. Adding 130 lbs of concrete mix to the previous very substantial concrete, pipe combination. This resulted in a very stable support. The support is located 60 Ft from the east end of the shed.

The mid-way support was to be the east end of the shed. Reinforcing the shed wall with 1 by 3 inch wood allowed for ¾ inch pipe flanges to be very secure. Standoff brackets completed the support process.

The end support was to be suspended from a previously used hook on our short power pole.

The next phase was more fun, it was technical, no digging or drilling required. Using the concept that the longer the horizontal wire, the more signal sent or received drove the design. Radiators of 0.25 or 0.75 wavelengths (wl) long would be a good match to a 50-Ohm cable. Sufficient number of buried radials would form the other half (image) needed for an efficient antenna. The formula 234 divided by Mega-Hertz equals the length in feet for a 0.25 wavelength radiator. Simply 3 times is 0.75 wavelengths. This longer length was my design goal.

The 80-75 Meter 0.25 wl wires took up half of the available space. Using a linear loading coil to extend them would not significantly extend the wire compared to the required coil size. The 60 Meter radiator is a 0.75 wl, coil loaded.
The 40 and 30 Meter radiators are 0.75 wl no coil loading.
The wires are spaced at least 29 inches apart.

The next phase was not fun, more digging! I buried nearly 80 Ft of ¾ inch plastic electrical conduit. This conduit protects the RG-8X coax cable from the shack to the feed point. Then I dug fifteen 20 Ft long trenches for the radials. Then I dug a 40 Ft trench for the long radial that extends to the East End of the shed.

The next phase was relatively simple. I transported the previously constructed antenna masts and other parts from my yard. The two 15 Ft masts consist of a 10 Ft and a 5 Ft length of typical TV antenna masts. The two 15 Ft cross arms are 1 Inch schedule 40 PVC reinforced with wooden dowels. The end support is a 7 ft length of 1 Inch reinforced PVC pipe.

Constructing the masts and pruning the wire lengths is too exhausting to relive.

As I had hoped, the antenna worked as designed. Very favorable signal reports were received on 75 and 40 meters. On-the-air analysis of 60 and 30 Meters is pending.

I will be glad to share more information with anyone desiring to build a NVIS antenna.
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TREASURER'S REPORT
KI5FJ

INCOME	BUDGET	ACTUAL YTD
Bean Feed Food	400.00	375.00
Breakfast & Drinks	600.00	398
Contributions	250.00	135.99
Dues	2000.00	1855
Education Classes	850.00	220.00
Equip Sales & Raffles	1845.00	2053
Bank Interest	30.00	
Other	0.00	
TOTAL	5975.00	5036.99

EXPENSES	BUDGET	ACTUAL YTD
Bean Feed	300.00	296.72
Breakfast & Drinks	400.00	79.76
Clubhouse	400.00	43.84
Education Classes	850.00	249.31
Field Day	150.00	
Insurance	1000.00	
Misc	100.00	121.15
NM Emergency Fee	30.00	30.00
NM Tax Exempt Fee	10.00	10.00
PO Box Rent	60.00	
Postage	100.00	
President’s Fund	75.00	78.96
Property Tax	800.00	
Repeater Maintenance	600.00	212.91
Electricity	450.00	196.37
Propane	500.00	39.29
Water	150.00	84.47
TOTAL	5975.00	1442.78

AS OF 31 May 2009	
INCOME	5036.99
EXPENSES	1442.78
NET	+3594.21

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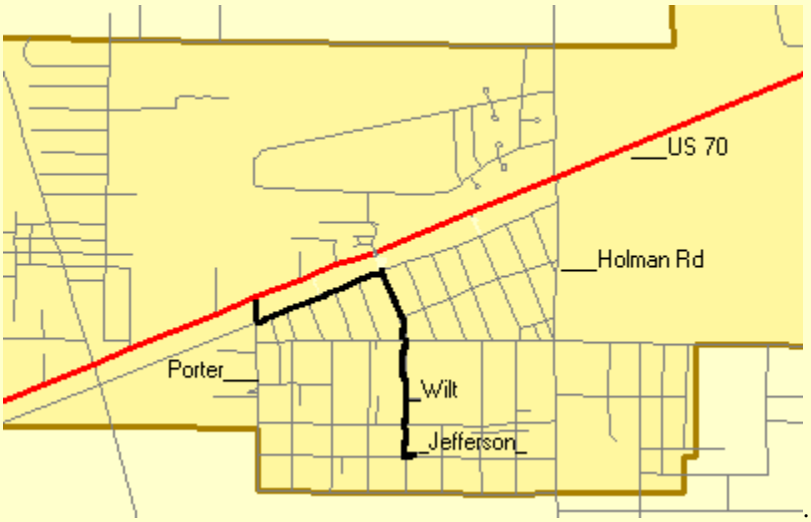
CLUB INFORMATION

The MVRC Clubhouse is located at the intersection of Wilt and Jefferson in Hacienda Heights. To find the clubhouse, set your destination on your GPS receiver as 32 degrees 22.961 minutes and -106 degrees 41.44 minutes. If you don't own a gps, take the Porter exit on US 70. It is about 5 miles from the I 25 interchange, near the firehouse. Almost immediately south of the south frontage road on the south side of US 70, turn left toward the mountains until you come to Wilt. Turn right. There is a jog in the road, but at 0.35 miles you should come to Jefferson. If you can't see the tower and beam, you shouldn't be driving. The treasurer would be delighted to receive your contribution for landscaping and furnishing.



Officers

Office	Name	Call	Phone	e-mail
President	Perry Welch	KC5HFJ	373-9171	perrywelch@hotmail.com
Vice-President	Cash Olsen	KD5SSJ	382-1917	kd5ssj@arrl.net
Secretary	Jack Lemons	N5PK	644-7207	jack_N5PK@hotmail.com
Treasurer	Joe Ostrowski	KI5FJ		ki5fj@arrl.net
Board Members	Alex. Burr	K5XY	522-2528	k5xy@arrl.net
	Bob Bennett	AD5LJ	382-0148	:rpbennett1@comcast.net
	Henry Schotzko	AD5FE	AD5FE	schotzko@comcast.net
	Kevin McNelis	K5KMC	571-7326	kmcnelis@nmsu.edu
	Robert Truitt	KE5OFK	649-4173	robhtruitt@zianet.com

The newsletter is always looking for articles and notes of interest to the members of the Mesilla Valley Radio Club. Please send them to Alex. F. Burr, K5XY, Editor, MVRC Local Oscillator, 695 Stone Canyon Drive, Las Cruces, NM 88011. Small personal ads from members will also be published. It would be helpful if submissions would be made in a machine readable form. Windows readable disks are welcome. Files can also be sent to the Internet address k5xy@arrl.net. The club maintains a web site at http://www.zianet.com/mvrc.

JOIN THE CLUB

To join the Mesilla Valley Radio Club, renew your membership, or to support the repeaters, please print, cut out, and complete the form below. Send it with dues ($35 single, $45 family per year, add $10 to receive the newsletter by US mail instead of e-mail) to: Treasurer, MVRC, Box 1443, Las Cruces, NM 88004.

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