



CLUB STATION
K6SON

Short Skip

The Newsletter of

Sonoma County Radio Amateurs, Inc.

P.O. Box 116, Santa Rosa, CA 95402-0116 707-579-9608

<http://www.sonomacountyradioamateurs.com>

Repeaters:

English Hill: 147.315+ 88.5 / 224.180+ 88.5 /
441.375+ 88.5

Castle Rock: 147.315+ 156.7



REPEATER STATION
W6SON

Volume 36, Number 6

June 2011



June SCRA Update

by Darryl Paule, KI6MSP
SCRA President

Field Day is only a few weeks away. June 25th and 26th at the Youth Park on Piner road, across from Piner High school.

There are many opportunities to participate, learn and have fun at this annual event. If you've not had a chance to operate in the various modes that will be available, from CW, SSB, VHF, and 6m this is your chance!

There will also be a GOTA station for those new to ham radio and want an opportunity to check it out. Brian N6IYY has also scheduled a VE session for the day.

There are still lots of positions to be filled. Especially set up on Friday the 24th. For further information on Field Day contact me at ki6msp@arrl.net

The program for the June meeting will be on Field Day and further organization of the event.

Several Public service events, including the MS walk, Human Race, and the Waves to Wine bike ride, have provided a few new hams the opportunity to start learning the procedures and protocols for operating. There will a lot more opportunities to learn and have fun.

Upcoming is the Terrible Two bike ride on June 18th. I invite all of you to participate in these public service events. Aside from providing a valuable community

service, we also build camaraderie, as well a lot of fun.

In August there are three events:

First up is the Mendocino Auto Rally. This will be the first time that the club has taken on an event of this magnitude. This will be in the Ukiah and Lake Port area. Contact Pat KG6JSL at: coylaw@sonic.net for information about participating.

The next weekend is the mini-dexpedition. This will also be a first for the club, in that we will be in a remote location cm79 located west of Garberville. This will be a weekend campout along with our radio ops. For further information on this event contact Charlie KZ6T at kz6t@arrl.net

Next up is the PCam air show. Contact Pat KG6JSL for information.

Finally we are still asking for food donations for the Redwood Empire Food Bank. There are many who live and work in our communities that don't have sufficient food for themselves or their families.

73

Darryl KI6MSP



Star
Restaurant

20% Unlimited Discount

1350 Farmers Lane, Santa Rosa (707) 544-8117

Cut out for your VIP Discount Card



2011 Club Officers

President	Darryl M. Paule ki6msp@arrl.net	KI6MSP 707-544-8874
Vice President	Charlie Sikes	KZ6T
Treasurer	Jack Christensen	K6ROW
Secretary	Evelyn Chavez	KI6PAY
Director	John Felton	KE5RI
	John Chavez	KG6PEP
Past President	Dave Santori	KF6CLG

Committee Lineup/Contacts

Membership Program	Mike Von der Porten	AD6YB	
	Charlie Sikes	KZ6T	
EmComm	Rich Freitas	KF6SZA	
Field Day Activity	Brian Torr	N6IYY	707-575-5871
Public Service	Craig Gaever	K6XLT	707-545-4133
Education	John Breckenridge	WB6FRZ	707-217-1017
Repeater	John Felton	KE5RI	
Volunteer Exam Liaison	Brian Torr	N6IYY	707-575-5871
Antenna			
Ordinance-Legal	Lee Dibble	KE6EAQ	707 544-1675
Public Relations	Bill McCall	W6WDM	707 538-2844
Public Relations	Jeff Basham	KK6JAB	707-291-7355
Refreshments	Jim Draeger	KI6REK	
ARRL DXCC/WAS Manager	Chuck Ternes	N6OJ	707 763-2528
Club Raffle	John Chavez	KG6PEP	
Member Badges	Ken Rawles	N6PWW	

Short Skip & Web Staff

Editor	Donald Laird	WE4MOO
	we4moo@donaldlaird.com	
Webmaster	Sutter Laird	KI6ZON

SCRA Hotline	707-579-9608
SCRA E-Mail	scra@sonomacountyradioamateurs.com
SCRA Web site	http://www.sonomacountyradioamateurs.com

Tuesday Night Net

Remember to check in to the SCRA net each Tuesday evening on the 147.315+(PL 88.5) repeater at 7:00 PM. Announcements are made of upcoming SCRA and other amateur radio activities in the broadcast.

Short Skip Advertising Rates

Business Cards	\$12 per month
1st Quarter Column	\$13 per month
Each Additional Quarter Column	\$4 per month
Full page (one side)	\$35 per month
Pre-printed inserts (each)	\$35 per month

Short Skip is published monthly and copyright 2011 by the Sonoma County Radio Amateurs, Inc. Permission to reprint articles is granted provided the source is properly credited. Items printed do not necessarily represent the views of the SCRA or its editors. Letters, photos and articles sent to Short Skip are subject to editing and may or may not be printed.



SCRA Club Meetings

The club normally meets the first Wednesday of each month. Exceptions are holidays or other big events.

Meeting location:
Luther Burbank Art & Garden Center
2050 Yulupa Avenue
Santa Rosa, CA



All are welcome!

Please join us at our next meeting. Anyone interested in Amateur Radio may be eligible for membership. A membership application is included in this newsletter. For more information, contact any SCRA officer, director or member.

Hungry before the meeting?

Join us for dinner! We meet at Star Restaurant,
1350 Farmers Lane, Santa Rosa.
People start showing up at 5:30 PM.
No RSVP is required.

See you there every month except December.

If you are not getting the ARRL San Francisco Section news by e-mail and you are an ARRL member, be sure to subscribe under your Members Only information or go to this Web site:

<http://www.arrl.org/Groups/view/san-francisco>

**Minutes SCRA Membership Meeting 5/4/2011**

Meeting called to order at 7:04

Observed a moment of silence for WA2EWE, SK

INTRODUCTIONS, UPGRADES, CHANGED CALLS

New member KD6GSY, also upgraded to General

WEBMASTER REPORT

Sutter KI6ZON, gave summary of recent minor upgrades to Website

PROGRAM

Swapmeet ran for about 30 minutes,

- Major purchase KU6F sold her Yaesu 897 to KD6GSY

Auction of left over miscellaneous items

- KI6KBH bought a solder pot for \$15
- KG6JSL offered a number of free items
- N6IYY also offered a number of free items and followed up with a few auction items that were gobbled up by WB6FRZ for the whopping sum of \$2.50
- Other items scooped up were a box off relays, and a couple of items characterized as door stops.

BUSINESS MEETING**VP REPORT**

- KZ6T offered no report

TREASURER REPORT

- K6ROW presented a summary of accounts.
- Total of \$16,885 in the bank accounts
- YTD expenses total \$1,209
- YTD Income totals \$4,011

EDUCATION REPORT

- WB6FRZ reported that General and Extra study hall is in progress, July Tech class has already 7 signups.

REPEATER

- KE5RI not present

PUBLIC SERVICE

- K6XLT summarized upcoming events.
- This weekend's WCC is fully staffed.
- This weekend's Human Race needs one more spot filled.
- May 21 is the Rose Parade, contact XLT to sign up.
- June 18 is the TT, contact XLT to sign up.

REFRESHMENTS

- KE6REK Spoke briefly

MEMBERSHIP

- AD6YB mentioned that emails were sent out to tardy signups resulting in a few signups. A mailing will follow.

MISCELLANEOUS

- KG6JSL gave brief update to Mendocino Rally.
- KZ6T offered no new information on Mini-DX.
- KI6MSP summarized the status of recent donated items. The income for the sale is just under \$1,000.
- KI6MSP and N6IYY gave brief account of Field Day.
- KI6MSP gave brief account of Human Race

MEETING MINUTES APPROVAL

- Because of the lateness of Shortskip being sent out, no one had read the minutes. Approval is tabled till next month.

NET CONTROL

- May 10: KI6TUR
- May 17: KI6MSP
- May 24: N6IYY
- May 31: K6SRO
- June 5: K6XLT

MEETING ADJOURNED 8:15 PM

30 total sign-ins for this month's meeting
Meeting notes compiled by KZ6T

Editor's Note:

This month's Short Skip was unfortunately delayed while I was waiting for the content to be submitted. Please be sure to submit anything on time to help avoid future delays!

Donald, WE4MOO
Short Skip Editor



Minutes SCRA Board of Directors Meeting 4/13/2011

In attendance:

Darryl, KI6MSP	John, KE5RI
Pat, KG6JSL	John, KG6PEP
Evelyn, KI6PAY	Jack, K6ROW
Charlie, KZ6T	Dave, KF6CLG
John, WB6FRZ	Brian, N6IIY
Mike, AD6YB	Bill, KI6GOO

Reports:

Charlie said that the by laws committee will meet next month to begin a review. They have added Jim KI6REK to the committee.

Evelyn: the minutes were not available.

Jack said that dues are still coming in.

Dave questioned when to drop the nonpaid from the Short Skip list. Mike asked that he wait until at least June. Brian suggested that Short Skip carry a tag line for those unpaid to remind them. Jack said that the forms are not received for those received by email and may not be correctly applied.

Darryl said that the IRLP will take at least another month.

Brian restated the VE schedule.

John WB6FRZ gave \$64.00 to the treasurer from the sale of books. The code class ended Friday. He has 5 people signed for the Extra class and 2 for the General class.

Mike reported that the Blood Bank will merge with another and access will be limited. Use Mike for reservations and contacts if other contacts fail.

Old Business:

Pat discussed the Mendicino Rally and what was observed at the Ridgecrest Rally. Twenty four Hams are now signed on for the August Rally.

Charlie reported that 10 people have signed up for the mini expedition. He discussed donated equipment and what is still needed. There was a discussion of using

real QSL cards or email cards. Jack and Dave proposed that the club pay \$500.00 to support the expedition. The motion passed.

Some discussion was held concerning sponsoring a Boy Scout unit. Jack and Dave asked John KG6PEP to bring in a proposal to be considered.

Nothing has been heard from the Humbolt Club concerning our offer to help with their repeater. Nothing more will be done.

Darryl is still requesting support for the Human Race, both money and manpower. The MS Walk is staffed.

Old radio equipment that has been donated will be viewed and priced for sale on 4/23 at John's (WB6FRZ) in the morning and available to Hams in the afternoon. Anything left will be sold at VOMARC on 4/30. Charlie and John KG6PEP moved to hold 12 pieces if possible for May Swap Meet, approved.

Dave reported hearing complaints about the new badges. A discussion was held and a comparison of the old and new badges was had. The new badges appeared to be okay. One emblem may be too dark.

New Business:

Bill KI6GOO gave a discussion about a Neighborhood Watch Program where Hams are involved for times of emergencies. Many thanks to Bill for bringing this to our attention. Several people will try to find more information from the Florida program.

Darryl asked for help to present information to the Girl Scouts and the Chops Center for teens interested in radio. John WB6FRZ and John KG6PEP both volunteered to help.

A discussion was held concerning awards.

Jack reported that Pay Pal requirements do not work with our bylaws. Charlie asked if we could open an account strictly for Pay Pal with a limited balance. More research will be done.

Meeting was adjourned at 7:48 P.M.

Respectfully submitted, Evelyn KI6PAY

ANAHEIM, CA
(Near Disneyland)
933 N. Euclid St., 92801
(714) 533-7373
(800) 854-6046
Janet, KL7MF, Mgr.
anaheim@hamradio.com

BURBANK, CA
1525 W. Magnolia Blvd, 91506
(818) 842-1786
(800) 854-6046
Eric, KA6IHT, Mgr.
Magnolia between
S. Victory & Buena Vista
burbank@hamradio.com

OAKLAND, CA
2210 Livingston St., 94606
(510) 534-5757
(800) 854-6046
Mark, W17YN, Mgr.
I-880 at 23rd Ave. ramp
oakland@hamradio.com

SAN DIEGO, CA
5375 Kearny Villa Rd., 92123
(858) 560-4900
(800) 854-6046
Tom, KM6K, Mgr.
Hwy. 163 & Claremont Mesa
sandiego@hamradio.com

SUNNYVALE, CA
510 Lawrence Exp. #102, 94085
(408) 736-9496
(800) 854-6046
Howard, W6HOC, Mgr.
So. from Hwy. 101
sunnyvale@hamradio.com

NEW CASTLE, DE
(Near Philadelphia)
1509 N. Dupont Hwy., 19720
(302) 322-7092
(800) 644-4476
Rick, K3TL, Mgr.
RT.13 1/4 mi., So. I-295
newcastle@hamradio.com

PORTLAND, OR
11705 S.W. Pacific Hwy.
97223
(503) 598-0555
(800) 854-6046
Leon, W7AD, Mgr.
Tigard-99W exit
from Hwy. 5 & 217
portland@hamradio.com

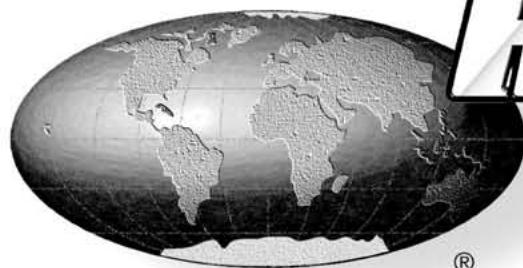
DENVER, CO
8400 E. Iliff Ave. #9, 80231
(303) 745-7373
(800) 444-9476
John, N5EHP, Mgr.
denver@hamradio.com

PHOENIX, AZ
1939 W. Dunlap Ave., 85021
(602) 242-3515
(800) 444-9476
Gary, N7GJ, Mgr.
1 mi. east of I-17
phoenix@hamradio.com

ATLANTA, GA
6071 Buford Hwy., 30340
(770) 263-0700
(800) 444-7927
Mark, KJ4VO, Mgr.
Doraville, 1 mi. no. of I-285
atlanta@hamradio.com

WOODBRIIDGE, VA
(Near Washington D.C.)
14803 Build America Dr. 22191
(703) 643-1063
(800) 444-4799
Steve, W4SHG, Mgr.
Exit 161, I-95. So. to US 1
woodbridge@hamradio.com

SALEM, NH
(Near Boston)
224 N. Broadway, 03079
(603) 898-3750
(800) 444-0047
Chuck, N1UC, Mgr.
sales@hamradio.com
Exit 1, I-93;
28 mi. No. of Boston
saalem@hamradio.com



HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION

KENWOOD



TS-2000 HF/VHF/UHF TCVR

- 100W HF, 6M, 2M • 50W 70CM
- 10W 1.2 GHz w/optional UT-20 module
- IF Stage DSP • Built-in TNC, DX packet cluster
- Backlit Front Key Panel

Low Intro Price!



TH-D7A(G) 2M/440

- 2M/440 Dual Band
- Built-in 1200/9600 Baud TNC
- APRS Compatible
- DX Packet Cluster Monitor
- 200 Memos., CTCSS
- VC-H1 Messaging Control

Low Pricing!



TM-D700A 2M/440 Dualband

- 50w VHF 35w UHF • Opt. Voice Synthesizer
- Receives 118-1300 mHz (cell blocked)
- Remote Head Inst. only (kit included)
- 200 Memories • Built In 1200/9600 baud TNC
- Advanced APRS Features
- DX Packet Cluster
- Tone Scan • GPS/VC-H1/PC Ports

COAST TO COAST FREE SHIPPING

UPS - Most Items Over \$100



Rapid Deliveries From
The Store Nearest To You!

YAESU



VX-7R

- 50/2M/220/440 HT
- Wideband RX
 - 900 Memories
 - 5W TX (300mw 220Mhz)
 - Li-Ion Battery
 - Fully Submersible to 3 ft.
 - DSP included • 32 color display
 - Built-in CTCSS/DCS
 - Internet WIRESS compatible

Great Price!



FT-857D

- Ultra compact HF, VHF, UHF
- 100w HF/6M, 50w 2M, 20w UHF
 - DSP included • 32 color display
 - 200 memos • Detachable front panel (YSK-857 required)

Call for Low Price!



FT-2000 HF + 6M tcvr

- 100 W w/ auto tuner
- built-in Power supply
- DSP filters / Voice memory recorder
- 3 Band Parametric Mic EQ
- 3 IF roofing filters

Call Now For Low Pricing!

ICOM



IC-706MkII HF/VHF Transceiver

- All mode HF/6M/2M/70CM
- 100W HF/6M, 50W/2M, 20W/440 Mhz
- AF-DSP • Plug and Play Filters - No Soldering
- Easy-to-Navigate menus

Low Pricing!



IC-756 PRO III All mode Transceiver

- 160-6M @ 100W • Enhanced Rx performance
- 32 bit IF DSP • SSB/CW Synchronous tuning
- Enhanced 5 inch color TFT w/spectrum scope
- Selectable IF filter shapes for SSB & CW
- Multiple DSP controlled AGC loops
- Advanced CW functions
- 101 alphanumeric memories

The Ultimate Radio!

ALINCO



DJ-196T 2M/HT

- 5 Watt out
- 40 memories
- Alphanumeric display
- CTCSS + DCS built in
- "S" meter
- Auto Dialer

Low Pricing!



DR-135TP 2M mobile

- 50 Watt out • Alpha numeric display
- 100 mems • Built-in TNC 1200 & 9600 Baud
- Front Panel GPS in • Rear DB-9 port
- CTCSS/DCS Encode/Decode built in

Low Pricing!



Public Service Roundup for May

May 7 will shortly be history when we will have supported two events at once. The Wine Country Century will be this weekend along with the Human Race. There are still a few slots left for the WCC so if you're interested, we'll put you to work. Next up though is the Terrible Two on 18 June. There's a great variety of superb rest stop sites, so get your pitch in now for the spot of your choice. We can always use SAGs too. We'll have a wrap up for the WCC next month.

Event	Comm Boss
6/18: Terrible Two	K6XLT, Craig
8/6: Mendocino Rally	KG6JSL, Pat
9/17-18: MS Waves to Wine	tbd
10/1: Levi's Gran Fondo	K6XLT, Craig

Craig
 K6XLT
 Public Service Wrangler k6xlt@sonic.net



Toll Free (Orders Only) 1-800-4-HALTED (1-800-442-5833)
 World Wide Web: <http://www.halted.com>

3500 Ryder St. Santa Clara, CA 95051	408-732-1573
4837 Amber Ln. Sacramento, CA 95841	916-338-2545
5681 Redwood Dr. Rohnert Park, CA 94928	707-585-7344





Sonoma County Radio Amateurs, Inc. Membership Application

Please Print Clearly New [] Renewal []

Name _____ Call Sign _____ License Class _____ Date _____

Address _____ H Phone _____ W Phone _____

City/State _____ Zip _____ E-Mail _____

ARRL Member? Yes [] No [] Receive Short Skip newsletter via email? Yes _____ No _____

Dues & Fees: March 1 to February 28

Individual / Associate Member	\$24 (\$6.00/qtr)
Family Membership	\$36 (\$9.00/qtr)
Under 18 Membership	\$18 (\$3.00/qtr)
Badge	\$10

Payment Calculations: Make checks payable to SCRA

Dues - Full Year	\$ _____
Dues - Prorated ____ Qts. x \$ ____/qtr	\$ _____
Badge	\$ _____
Other - _____	\$ _____
Donation	\$ _____
Total	\$ _____

Badge Information

Call Sign _____

First Name _____

City _____

Mail to: SCRA, P.O. Box 116, Santa Rosa, CA 95402





CONTEST CORNER by Kevin Alt, K6BSG

Hello testers. Well, it's once again time for Field Day. I hope to see you out there on the 25th. Lots of other contests are available throughout the month with many different operating modes and frequency bands. Happy DX'ing!

3 Jun – **SNS & NS Weekly Sprints** – CW, 160-20 meters. See: www.ncccsprint.com/rules.html.

4 Jun – **LZ Open 20 Meter Contest** – CW, 20 meters. See: www.lzopen.com.

4-5 Jun – **Worldwide EME Contest** – Phone/CW, 1.2 GHz. See: www.dubus.org.

4-5 Jun – **Ten-Ten Open Season** – Digital, 10 meters. See: www.ten-ten.org.

4-5 Jun – **Maritime QSO Party** – Phone/CW, 160-2 meters. See: www.maritimecontestclub.com.

4-5 Jun – **SEANET Contest** – all modes, 80-10 meters. See: seanet2011.com/contest.htm.

4-5 Jun – **UKSMG Sporadic E Contest** – all modes, 6 meters. See: www.uksmg.org.

4-5 Jun – **IARU Region 1 Field Day** – CW, 160-10 meters. See: www.iaru.org/contest.html.

4-5 Jun – **Alabama QSO Party** – SSB/CW, 160-10 meters. See: www.alabamaqsoparty.org.

5 Jun – **DARC 10 Meter Digital Contest** – Digital, 10 meters. See: www.darc.de/referate/ukw-funksport.

7 Jun – **ARS Spartan Sprint** – CW, 80-10 meters. See: www.arsqrp.blogspot.com.

8 Jun – **CWops Monthly Mini-CWT Test** – CW, 80-20 meters. See: www.cwops.org/onair.html.

11 Jun – **Portugal Day** – SSB/CW, 80-10 meters. See: portugaldaycontest.rep.pt.

11 Jun – **Asia-Pacific Sprint** – SSB – 20-15 meters. See: jsfc.org/apsprint/aprule.txt.

11 Jun – **DRCG Long Distance Contest** – Digital, 80-10 meters. See: www.drcg.de.

11-12 Jun – **WFF Green Days** – all modes, 160-10 meters. See: wff44.com/en/contest/.

11-12 Jun – **Australian Shires Contest** – SSB/CW, 80-10 meters. See: groups.yahoo.com/group/vkshires.

11-12 Jun – **GACW WWSA CW DX Contest** – CW, 80-10 meters. See: www.wwsatest.org.

11-12 Jun – **REF DDFM Six Meter Contest** – Phone/CW, 6 meters. See: concours.ref-union.org.

11-13 Jun – **ARRL June VHF QSO Party** – All modes, 6 meters and up. See: www.arrl.org/contests.

11-19 Jun – **World Wide QRP Contest** – Phone/CW, 160 meters – 70 cm. See: en.jaqrp.org.

15 Jun – **NAQCC Monthly QRP Sprint** – CW, 80-20 meters. See: naqcc.info.

16 Jun – **SARL Youth Day Sprint** – SSB, 40 meters. See: www.sarl.org.za.

18 Jun – **Kid's Day** – Phone, 80-10 meters. See: www.arrl.org/kids-day.

18 Jun – **Feld-Hell 10 Meter Sprint** – Digital, 10 meters. See: www.feldhellclub.org.

18-19 Jun – **All-Asian DX Contest** – CW, 160-10 meters. See: www.jarl.or.jp/English.

18-19 Jun – **SMIRK QSO Party** – Phone/CW, 6 meters. See: www.smirk.org.

18-19 Jun – **West Virginia QSO Party** – all modes, 80-10 meters. See: www.qsl.net/wvsarc.

19 Jun – **WAB 50 MHz Phone** – Phone, 6 meters. See: www.worked-all-britain.co.uk.

22 Jun – **NAQCC Milliwatt Sprint** – CW, 80-20 meters. See: naqcc.info.

Continued on next page...



Contest Corner, Continued.

23-27 Jun – **SARL Top Band QSO Party** – Phone/CW, 160 meters. See: www.sarl.org.za.

25-26 Jun – **His Majesty King of Spain** – SSB, 160-10 meters. See: www.ure.es.

25-26 Jun – **Marconi Memorial HF Contest** – CW, 160-10 meters. See: www.arifano.it/Contest_Marconi.htm.

25-26 Jun – **ARRL Field Day** – all modes, all bands. See: www.arrl.org/contests.

25-26 Jun – **QRP ARCI Milliwatt Field Day** – all modes, all bands. See: www.qrparci.org.

PCAM 2011

The Club has again been invited to the 2011 Pacific Coast Air Museum Air Show to be held on August 20 and 21 at the Sonoma County Airport. This is a great show and an excellent opportunity for the Club to make itself known to the community. We will have a special event station again this year and hope for decent propagation.

We need about 10 volunteers, 5 each on Saturday and Sunday, and volunteers get free air show passes. We also need a work crew for a couple of hours on Friday afternoon for set up.

Contact Pat Coyle, KG6JSL, at coylaw@sonic.net for more information and to volunteer.

SCRA Calendar

Google has changed its links to calendars. To access the SCRA calendar, visit:

<https://www.google.com/calendar/b/0/render?cid=56ozmo@gmail.com&gsessionid=OK>

Lost Coast Mini-DXpedition

SCRA is sponsoring a Mini-DXpedition to the Lost Coast this August. We will operate as a Special Event station using the call-sign of N6T. June is the last month to sign-up for the event as an operator as we must begin final planning. Everyone (regardless of license class) is welcome to come and participate. For more information on the event click on this link, or send an email to kz6t@arrl.net.

You are welcome even if you just want to come for the camping. The campground for Friday and Saturday night is already paid for, so bring the family and enjoy a weekend of camping in the King Range National Conservation Area.

Charlie ...
KZ6T

Mendocino Rally

The Club is providing radio support for the Mendocino Rally, an Off Highway performance rally being held in the South Cow Mountain Off Highway Vehicle Recreation Area east of Ukiah on Saturday, August 6, 2011. This will be a great event, with specially prepared cars racing at over 60 mph on a dirt road intended for travel at 20-25 mph. You can view a cool clip of a Rally at <http://espn.go.com/video/clip?id=3424094> (wait a minute to get through the ad.)

There will be a BBQ at Net Control around 6 PM during a break in the racing. The event will continue into the evening and some volunteers are making a weekend of it and plan on camping at the Red Mountain Campground right off the course. The Rally website is mendocinorally.com. You can volunteer by signing up on the website and contacting Pat Coyle, KG6JSL at coylaw@sonic.net. Feel free to bring your non-ham friends along as well. This is going to be fun.



VE Sessions

We had a very good VE Session on May 21. We had a total nine candidates and six of them walked away with either a new license or an upgrade. One of the new licenses was an Extra! I would also like to thank the VEs that assisted in this session: John, WB6FRZ, Rick, N6GY, Saraj, KU6F, Dave, W6IBC, and Dan, WA6CRB.

Our next VE exam session is scheduled for Saturday, June 25, starting at 12:30pm, at our Field Day site at Youth Community Park, across from Piner High School on Fulton Rd in Santa Rosa. We will be accepting walk-ins at this session. All test elements will be administered.

In addition to the items listed below, I recommend that candidates bring a hat, sunglasses, and sunblock, since it is not certain that we will be able to get access to the gazebo for shade.

Candidates should bring the following:

- One (1) photo ID or two (2) non-photo ID
- Social Security Number (if not currently licensed) or FCC Registration Number (FRN, if licensed)
- Original and photocopy of your current amateur radio license (if licensed)
- Original and photocopy of any valid CSCEs (if applicable)
- #2 Pencil and eraser
- \$15.00 exam fee. Checks may be made payable to "ARRL-VEC"

Calculators may be used, but it must be demonstrated that all memories and programs have been erased. The calculator function in a cell phone or PDA may not be used! If you have any special needs, please contact Brian Torr, N6IYY in advance.

Good Luck!

Brian Torr, N6IYY
n6iyy@arrl.net
(707) 575-5871

A Mini Primer on SWR Measurements

By John Breckenridge, WB6FRZ

Acknowledgements

I wish to recognize the thoughtful review of this article by Al Bloom, N1AL, truly one of Sonoma County Radio Amateurs guiding lights. I also credit M. Walter Maxwell, W2DU, the author of "Reflections, Transmission Lines and Antennas," the book that inspired this article. Some sayings from Kurt N. Sterba were also used.

Introduction

I have long noticed that many new-time and old-time amateur radio operators alike hold the idea of low SWR (standing wave ratio) for antenna systems very near and dear to their hearts. High SWR has been blamed as being the cause of TVI, poor transmitted signals, burned finals and antenna system problems. Low SWR has been the most sought-after and trusted measurement among hams for antenna system adjustment and monitoring. So let's consider what SWR measurements are, why we make them in the first place, and how we can best interpret the readings we measure.

What Is the Definition of SWR?

SWR stands for standing wave ratio. SWR is computed from the ratio between an RF signal going in the forward direction (toward antenna) and the RF signal going in the reverse, or reflected direction (toward transmitter) on a transmission line. Any discontinuity or impedance mismatch along the line or at the ends of the line will cause a portion (at least) of the RF signal to reverse direction. The SWR meter detects the magnitude of that reflected signal in relation to the magnitude of the forward signal. From that information, certain conclusions are then drawn about the quality of the antenna or antenna system. These conclusions rest solely with YOU, the operator.

You will also hear the term VSWR, which stands for voltage standing wave ratio. SWR and VSWR are the same thing.

Continued on next page...



SWR Measurements, continued.

Let's do a little math, very little math, to clarify this ratio.

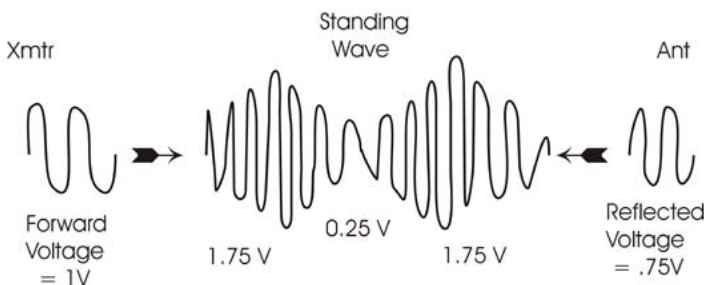
We know that

$$\text{VSWR} = \frac{\text{Forward Voltage} + \text{Reflected Voltage}}{\text{Forward Voltage} - \text{Reflected Voltage}}$$

If Forward Voltage is 20 volts
and Reflected Voltage is 0 volts, then we get:

$$\text{VSWR} = \frac{20 + 0}{20 - 0} = \frac{20}{20} = 1$$

That 1 is the FIRST number in the ratio. The SECOND number, after the colon (:), is ALWAYS 1. So, our answer is a VSWR (or SWR) of 1:1, pronounced "one to one." The following art is a visual representation of voltage standing waves having a ratio of 7 to 1.



An example of high SWR. Here the forward voltage is 1V and the reflected voltage is .75V for an SWR of 7:1
 $(1 + .75) / (1 - .75) = 1.75 / 0.25 = 7:1$

How is SWR Measured?

Whatever we use to measure SWR, somehow we need to measure the "forward" signal and the "reflected" signals and mathematically manipulate the values. The result may be shown directly in SWR on a meter, or as a swept value of return loss or SWR on a network analyzer (the latter usually being a VERY expensive piece of test equipment).

The most common and cheapest way to measure SWR is with an SWR bridge (SWR meter). Inside there are

diodes and other circuitry that allow a meter needle to move. As you might imagine, these meters do not necessarily give the most accurate readings. However, for all but the purist, these simple and relatively cheap meters do a reasonable job for amateur radio work, although uncertainties are magnified at VHF and above.

What Does a Low or High SWR Mean?

As you read the explanations given here, try not to make any judgments or jump to conclusions about the meanings.

A low SWR refers to a large forward RF signal and a small reflected signal. Since the reflected voltage can never be less than zero, the very lowest value possible is 1, or 1:1.

A high SWR refers to a large reflected signal. For example, a meter reading of 9.5 indicates an SWR of 9.5 to 1.

Incidentally, you may note that there are not many numbers on the meter after about 3 or 5. That's because SWR values get very large very quickly. It is difficult to tell the difference between an SWR of 9.5 and 35, for example.

Low SWR is Good and High SWR is Bad, Right?

Wrong, wrong, wrong. That's like saying cold water is good and warm water is bad. To a penguin, this is probably true. But to a person who fell through a hole in an ice-covered pond, it is probably false.

Like water temperature preference, the interpretation of good, bad, or indifferent SWR depends upon the situation! Sorry, folks; there just aren't any quick and simple answers here. Ask a few hams and I think you will hear statements like: "A good SWR reading means my antenna is working properly," or "A bad SWR reading means there's a problem with my coax or antenna." It's a shame that these simplistic, well-intentioned, widely accepted viewpoints are passed on from one ham radio generation to the next.

Now that I have your attention, let's consider some situations of good high SWR and bad low SWR.

Continued on next page...



SWR Measurements, continued.

Examples of Good High SWR and Bad Low SWR

Suzie Hamm has been a ham for years. Her old antenna system, fed with 23 year-old coax cable, has NEVER given her any problems! In fact, her SWR meter always shows a very low SWR. "If it ain't broken, don't fix it," I've heard Suzie say. The problem is that Suzie's coax has become so lossy over time that her antenna could be disconnected and she would STILL get an SWR reading of 1.5 to 1! But how could this be? Remember, the SWR meter is stupid, it can't interpret what is CAUSING it to read the way it does. The SWR is low because the lossy coax cable absorbs the forward RF energy going to the antenna, and also absorbs any reflected power (if there is any left to be reflected) from the antenna going back toward the transmitter. OF COURSE the SWR is low! The solution to Suzie's situation would be for her to periodically measure the power at each end of her coax cable with a dummy load attached. Without changing the transmitter power, the difference in the readings is the amount of power lost through the coax. Low SWR does not guarantee a better signal.

Baluns are wonderfully magical devices; they make everything okay. In fact, some hams have been able to reduce the SWR of their dipole antennas by simply inserting a 1 to 1 balun at the antenna terminals. The SWR doesn't rise at the band edges like it did when the balun wasn't there! OOPS, a red light should go on here, but normally hams will just be pleasantly surprised at the quality of that balun and brag about it to their buddies. What they should be doing is throwing the balun in the trash and replacing it with one that works. Here's what is happening: The balun was made of a ferrite core that saturated when power was applied. The core material provided significant power loss, turning that precious RF into heat before it even got to the antenna! Low SWR does not guarantee a better signal.

Consider a ground-mounted HF quarter-wave vertical antenna system with 12 radials. Its input resistance is determined by adding its radiation resistance and ground loss resistance. Radiation resistance for this antenna is close to 32 ohms and ground loss resistance is on the order of 20 ohms. 32 plus 20 gets you 52 ohms, and your SWR meter shows a perfect match us-

ing 52-ohm coax. So that means an optimum vertical has 12 radials? Nope, because the power "radiated" by that 20 ohms of ground loss resistance is lost warming the worms in the ground! Add 25 more radials to the system and the SWR at resonance will rise because ground losses decrease. The SWR may now show 1.4 to 1, but the worms get colder because your vertical is a more efficient radiator! Low SWR does not guarantee a better signal.

Let's take the above example one step further. Let's say you don't like radials so you decide to install only four of them onto your vertical. Your radiation resistance is still about 32 ohms. But now your ground losses are also on the order of 32 ohms, giving you about 64 ohms for input impedance. That equates to an SWR of about 1.3 to 1 at resonance. The SWR is still "acceptable" to your rig, so you move off frequency and find a wonderful thing! The SWR seems quite "flat" across the band; it doesn't rise as you might expect - it's a miracle! You always suspected that you didn't need all those nasty radials, anyway. Nope, sorry. What has happened is that the ground losses are so high now that they hold the off-resonant SWR to a lower value than would be normal if you had a DECENT radial system. You are really making the worms uncomfortably warm now because HALF your power is HEATING THE GROUND. Low SWR does not guarantee a better signal.

Joe Hamm is testing a new Yagi beam antenna. It seems like no matter what Joe does to the antenna, the SWR is 3 to 1 or more. Joe tries changing the length of the coax because he read somewhere that doing that tunes the antenna. And guess what, the SWR drops to 1.2 to 1! Obviously Joe has confirmed that the length of the coax tunes the antenna, right? Wrong. Joe had a problem before, and still has a problem, although his SWR meter suggests that he fixed it. The problem is that the RF is squirting out of the end of the coax and flowing on the OUTSIDE of the coaxial braid. What this does besides allowing the coax to radiate and make for totally bogus SWR readings is seriously affect the front-to-back ratio of Joe's beam. The beam no longer shoots its energy properly in the desired direction. This is not good. To correct all of this, it is very important to have a well-engineered balun just ahead of the beam's gamma matching network. If for some reason

Continued on next page...



SWR Measurements, continued.

the balun is not taking care of the problem, then ferrite beads can be placed over the outside of the coax at the connection to the antenna to “choke off” any stray RF that wants to misbehave. Low SWR does not guarantee a better signal.

Fred Frequency has a multiband HF antenna system and feeds it with 100 feet of Belden 9913 coax cable. The other end of the coax is connected to a tuner, SWR bridge, and then to a transceiver. Fred operates 80 through 10 meters with this setup. Fred adjusts the tuner for an SWR reading that shows a good match to the rig. But wait, you say. For various bands, isn't there still a very high SWR (mismatch) between the output of the tuner and the system? Yes, but that DOESN'T MATTER. I will explain why. YES, its true that coaxial cable losses increase as the SWR increases. From the ARRL handbook, an SWR of 7 to 1 between the tuner and the line creates 1.3 dB of reflection loss in the line. The ham in contact with Fred will see a difference of a quarter of an S unit due to the TINY losses in Fred's cable from a 7 to 1 SWR. When was the last time you heard the signal strength difference of a quarter of an S unit? High SWR does not mean a worse signal.

Now let's look at situations showing what most of us are used to seeing, good low SWR and bad High SWR.

Examples of Good Low SWR and Bad High SWR

Juan Deebee has a 20-meter station with transceiver, SWR meter, and coax cable to a beam at 145 feet (oh, that I were Juan). Anyway, when installed, his beam showed these SWR readings:

Frequency	SWR

14.01 MHz	2.3
14.15 MHz	1.2
14.34 MHz	2.1

This is a reasonable characteristic and is an indication that things are as they should be. But two years after it was installed, the SWR at 14.15 MHz increased to 3.4. This high SWR is bad and is an indication of trouble. Now I'm glad I'm not Juan, because he will probably need to climb that 145-foot tower to find the trouble!

Of course, he will check the coaxial connectors that are in the shack first. If he's smart, he will rent a helicopter to work on the beam.

Harry Hamm (Suzie's brother-in-law by a previous marriage and Joe's older nephew) is installing a tuned 40-meter dipole. His transceiver connects to an SWR meter, then to 75 feet of RG-58U coaxial cable to the center of the dipole. Harry has the following SWR readings:

Frequency	SWR

7.01 MHz	1.9
7.18 MHz	1.0
7.29 MHz	1.7

Harry has a good setup here. He has no tuner, but Harry adjusted his antenna for good low SWR at the frequency that allows operation over the entire band. The radio matches into the antenna system with no problem. The SWR increases toward the band edges, but with a simple dipole, it SHOULD! If it doesn't, suspect trouble.

So, Whom Can You Believe?

Last December marks my 27th. year as an amateur radio operator. That doesn't mean I know very much; all it means is that I've been licensed for awhile. There is a LOT of misinformation about antennas and antenna systems that continues to be handed down from ham generation to ham generation. You new hams can learn a lot from “old timers.” But be mindful that myths have been around for a long time and some of us “old timers” never did get it right. It took me years to find out that reflected power in a low loss transmission line is not wasted, is not dissipated, does NOT come back down the line and burn out the final amplifier. I learned that in a low-loss system, most of that REFLECTED power IS transmitted by the antenna. It might have to jump back and forth a bit, but those reflected signals are radiated!

If you don't believe me, it's okay, I understand. With the disinformation I have heard over the years, I could hardly accept some of these ideas myself. But we condition ourselves through repetition and constant bom-

Continued on next page...



SWR Measurements, continued.

bardment of the wrong information until we accept it as “fact” without even considering its validity based on scientific principles.

Conclusions

An SWR meter can be a handy tool for the average amateur radio operator. But many of us have not learned enough about antennas, feed lines, and reflected signals to determine if a particular SWR reading is good or bad. And then when we REALLY determine that it's bad, we haven't learned how to correct the situation. The point is NOT “to have a low SWR reading.” The point is “to have an efficient antenna system; one that radiates well.” And many times it is also important to have a flexible system that covers more than one band.

Finally, I want to offer you a solid basis on which to build your antenna knowledge, as well as dispel some of the stuff you may have believed was true for years. I

refer you to further study using the book “Reflections, Transmission Lines and Antennas,” by M. Walter Maxwell, W2DU. Please, please get a copy of it, if you are at all interested in how RF acts in a mismatched transmission line. It's all in there. The book is published by the ARRL, it's \$20 plus change, and you won't be sorry. And no, I don't get a commission by recommending it.

Everything Walter says is based upon well-established facts of physics and electrical engineering. But much of it is readable enough so that even thick-skulled dolts like myself can understand. For you brainy ones, there is plenty in there to keep you interested.

Experiment, keep learning, and have fun. For me, that's part of what amateur radio is all about.

Best Regards,

John Breckenridge
WB6FRZ

2011 PROGRAM SCHEDULE

Date	Program	Presenter
Jun 1, 2011	Field Day	Field Day Chairman
Jul 6, 2011	Mobile Installation Showcase	
Aug 3, 2011	Boat Anchor / Homebrew	
Sep 7, 2011	Fox hunting / IRLP / Echolink	KE5RI / KG6PEP
Oct 5, 2011	Test Equipment	N6IYY / WB6FRZ
Nov 2, 2011	Elections / Game Night	
Dec 7, 2011	Holiday Party, No Program	



Sonoma County Radio Amateurs, Inc.
P.O. Box 116
Santa Rosa, California
95402-0116

Return Service Requested