



THE

PROPAGATOR

The Monthly Newsletter of the South Orange Amateur Radio Association

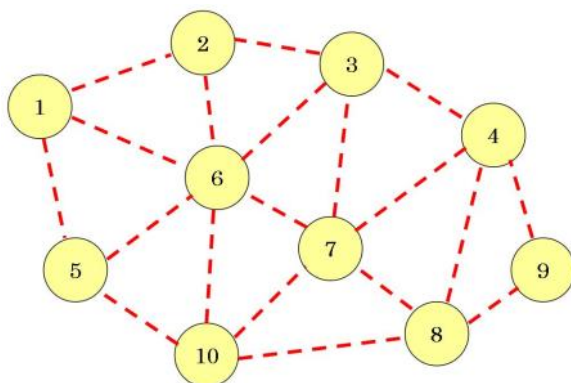
September 2014

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Broadband-Hamnet™

This month's speakers are Don Hill KE6BXT and Joe Ayers AE6XE presenting an in-depth demonstration of [Broadband-Hamnet™](#), a self configuring fast Amateur Radio mesh wireless networking software.



sure to add your call sign or name so that we can identify the source of the funds so that we can give you credit for that.

Sean (AJ6B) has three classes on the schedule, in order they are General, Extra, and Technician so keep an eye out for more information. I would like to encourage all to use our repeaters more often and if you hear someone out there feel free to come back to them.

Heiko, AD6OI



From the VP

It is time for another meeting on Monday and we have a couple of great presenters showing off an interested subject. Don and Joe have been working on this project for quite a while now and the results have been good.

Several things of note for all members, Dues renewal starts up this month and the way it works is that a regular member pays \$ 50 and a student or family member pays \$ 25 per year. Payment can be made at the meeting, by mail to our Post Office Box, or through SOARA's pay-pal account.

Also on Dec. 7 we have our annual Holiday Party, again this year at Antonuccis' Ristorante in Mission Viejo. The cost is \$ 30 which remains the same as last year and the food is good. Payments can be made the same as for renewals and be

We appreciate your membership and paying your dues [online](#) helps reduce costs for the club.

Please note that you do not require a Paypal account to make dues payments with Paypal.

Be sure to include your call sign (if you have one.)

Meeting

September
15th, 2014

7:00 PM

N.P.

Murray
Center

Veterans
Way

Mission Viejo

Now Pay Dues
Online
Just Click Here



SOARA Saturday

September 20

Fall Auction

November 17

SOARA Holiday Party

December 7

VEC License Exams

6pm—before
the General
Meeting

Please see our
[website](#) for
more info.

Walk-ins ok.

Extra | General |
Technician
Exams

[SOARA
Website](#)

Volunteer Operators Requested

Mission Viejo High School could use some hams for their November 1st Home Field Marching band competition. Diane and I will be working it this year once again. We need to park 22 high school bands, each with their buses and equipment trucks. It's a well-choreographed ballet to get them all into the lots on time. They used to use school radios, but they no longer have a license for them. This is my 3rd year at this event and it is a hoot!

Thanks,
Vic Ray, W6VGR

Silent Key

Long time SOARA member and one of the founding members of the Casta del Sol Radio Club, **Burt Bradley (K6USI)**, passed away on July 11th. He and his wife, Becky (K6QQZ), kept the radio club going for years by maintaining the radios and antennas, installing new antennas, and keeping the club house clean. His knowledge of the radio was insurmountable. He will live in all our hearts forever.

73 Burt

Vern, W6VDV

Upcoming SOARA Amateur Radio Classes

General weekend class: Saturday Oct 4, from 9am to 7pm and Sunday Oct.5 from Noon to 7pm.

Technician weekend class: Saturday Nov. 15 from 9am to 7pm and Sunday Nov. 16 from Noon to 7pm.

Extra Class: Wednesday evenings from 6:30pm to 9:30pm starting Oct1 to Nov. 19.

Prospective students should contact Sean at aj6b@soara.org, well before the class for further information. All classes are held at the Norman P. Murray community and senior center in Mission Viejo. 24932 Veterans Way, Mission Viejo.

SOARA Raffle Update:

Hal Silverman

\$5 prize: FT7900R. We need to sell only 20 more tickets.

\$1 prizes may include:

MFJ-281 Speaker
MFJ-108 Station Dual Clock
Anderson Power Pole Connectors
HF Mini Flashlight
HF Cutters and pliers
HF Cordless drill

73.....Hal WB6WXO

If there are any comments or suggestions for either the \$1 prizes or a future \$5 prize, please contact me at WB6WXO@SOARA.org





“Mission Viejo Special” HF Antenna

A Multi-band (40m ~ 6m) vertical with no traps, and mostly no tuner required by Tak Asami, W6Si

--- Compressed Edition for Propagator ---
[Full edition available on w6si.com]

NOTE: W6Si has gone to the metric system this year, so most, if not all measurements given below are in metric. If you need to convert them, $1m = 3.2808 ft$.

I have been living in Mission Viejo, one of the original planned community towns with antenna restrictions, for the past couple of decades. I have been trying to get out on the air to work as much DX, despite the limitations, since. I have been fortunate to get a permit from my HOA to build a moderate vertical antenna in the back yard to operate, but the arrangement was only adequate at best, and especially at lower bands, the performance was a bit thirsty.

Last year, I built a full size 40m quarter wave vertical, a fiber pole as the support. I actually liked this antenna very much; I never had such a good result on 40 meter band before. But as it was, I could only use it for the 40 and 15 meter bands. Other bands were possible only through use of a tuner. That prevented me from using a high power amplifier and the performance on those bands were a bit questionable. Since 20 meter is my main DX band, I decided to add a second element just to support that band. That worked fine, but other bands remained limited. Then one day it just occurred to me. After evaluating wave lengths of all relevant HF ham bands, I figured out that three wires of strategic lengths were enough to operate on all HF bands 40 meter and above, and some bands actually can expect some gain! And the structure is not complicated at all.

I am calling this custom vertical a Mission Viejo Special, commemorating the deed-restriction city USA. It is not-so-visible but of good performance (wide bandwidth, good radiation efficiency, low radiation angle), very suitable antenna for a hidden DX-er in the area.

Specifications

The antenna is a vertical, with three different radiation elements, 10.10m / 7.50m / 5.07m parallel to each other, shorted at the feed point. It functions with less than 2.0 SWR for most of the bands for 40, 30, 20, 15, 10 and 6 meter bands without antenna tuner, as one of three wires are $\frac{1}{4}$ wave length or odd multiples thereof. And it functions as $\frac{5}{8}$ wave length ground plane for 17 and 12 meter bands. You will need a tuner for those bands, but like those VHF/UHF antenna of $\frac{5}{8}$ lambda, you can expect a theoretical gain of near 3dBd, due to boost on the low angle of radiation.

I am using an antenna tuner at the base (feed point) for these bands. It must be done at or near the feed point, since tuning in the shack through a length of coax cable, you will have no idea how it looks like at the feed point of the antenna.

The grounding... Yes, grounding is important, but no need to go extreme. I buried eight 7m (~20ft) wires across my back yard, and also tied a wire to the wrought iron fence in the back. I never made any length adjustment for the counterpoise, but the antenna functions fine.

It is also highly recommended that an UNUN, a.k.a. an RF choke is inserted at the feed point, to mark the end of feed line and the beginning of the antenna. I built one by feeding coaxial cable through several ferrite beads of proper size.

...Continued on pg. 4



*Mission Viejo Special (continued from pg. 3)***Construction**

First, the most important ingredient: fiberglass tubing mast. I used DXE-FTK50 50 ft Fiberglass Tubing Kit from DX Engineering. This is the majority cost of this antenna. I used the bottom five stages to form a 10 meter mast, making the 52mm OD at the bottom,

25.4mm OD at the top.

For the radiation elements, instead of bare copper wire, I used a tinned copper braid over Dakron rope, 4.75mm OD. It is sold at thewireman.com as "Hot Rope". Because of its thick braid elements, the element is just as good as using aluminum tubing, affording nice, wide bandwidth with low loss. It is important that the three wires do not short each other except at the feed point at the base. To achieve that, I did:

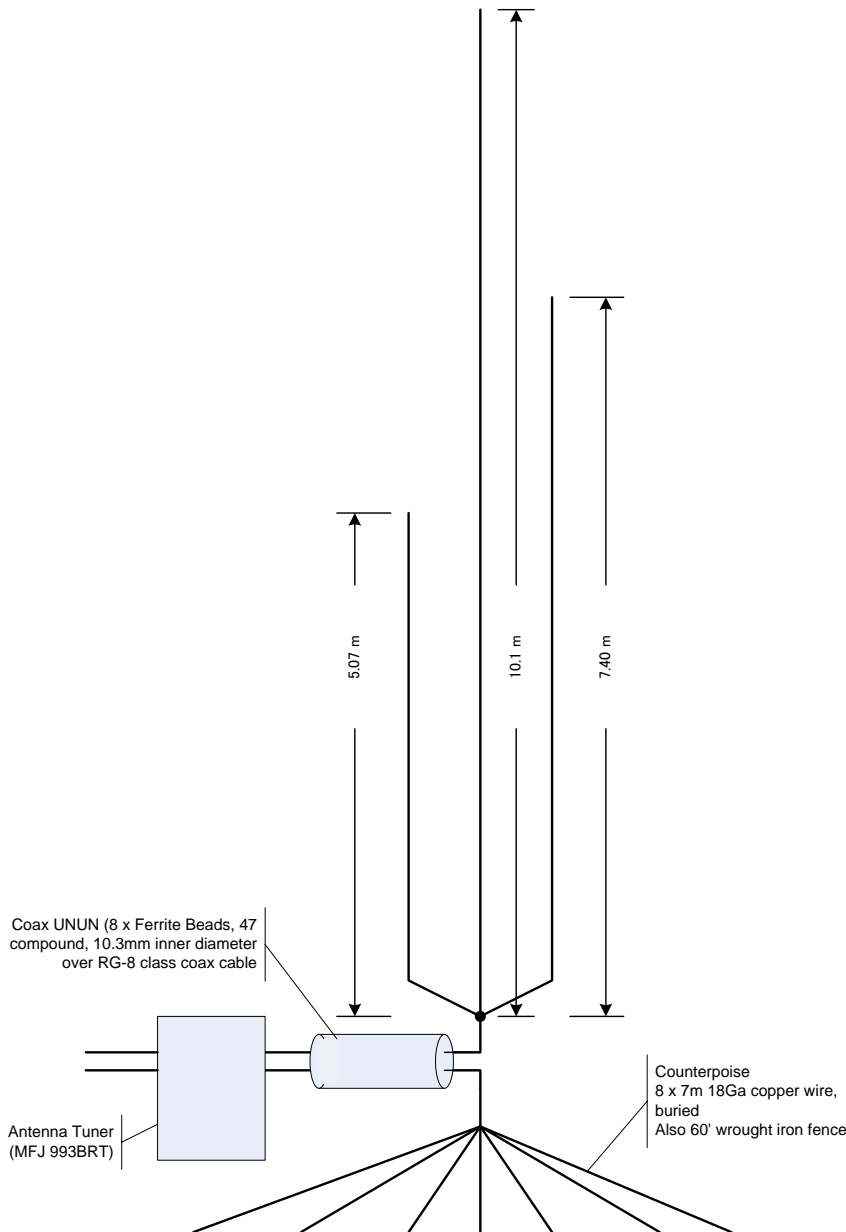
40 meter element is loosely wrapped around the fiber pole, to prevent it from flying around.

30 and 20 meter elements are hung from the top support bar (see "Wire Support / Feed Point Bars" above), from opposite side of each other. The tension is applied to each element using Dakron ropes via pulleys attached at each side of the support bar to keep them straight. It is convenient if it becomes necessary to re-tension the rope every now and then.

The three wires are shorted at the bottom horizontal bar, to which a copper foil is wrapped around, then connected to the inner conductor of the feeding coax, via the SO-239 connector attached on the radial plate (describe above).

The antenna is relatively broadband, so the wire length adjustments are not very critical. On the other hand, the harmonic relationships

are not always exact, so some compromise is made to make all bands usable. For example, 30 meter band element is too short for 10 meter band if it is cut for 10.1MHz. So I cut it for $\frac{3}{4}$ wave of 28.5MHz. That makes the element tuned for about 9.5MHz, too long for 10m band. Ultimately, I cut the wire to resonate around 28.8MHz, and 30 meter band is still well below 2.0 limit. The feed point impedance is not the same for each band, so none of them are of perfect match. My rule of thumb is if SWR is less than 2.0, then it is usable (without a tuner). This is true for most of the modern solid state power amplifiers, and certainly true for vacuum tube amplifiers.

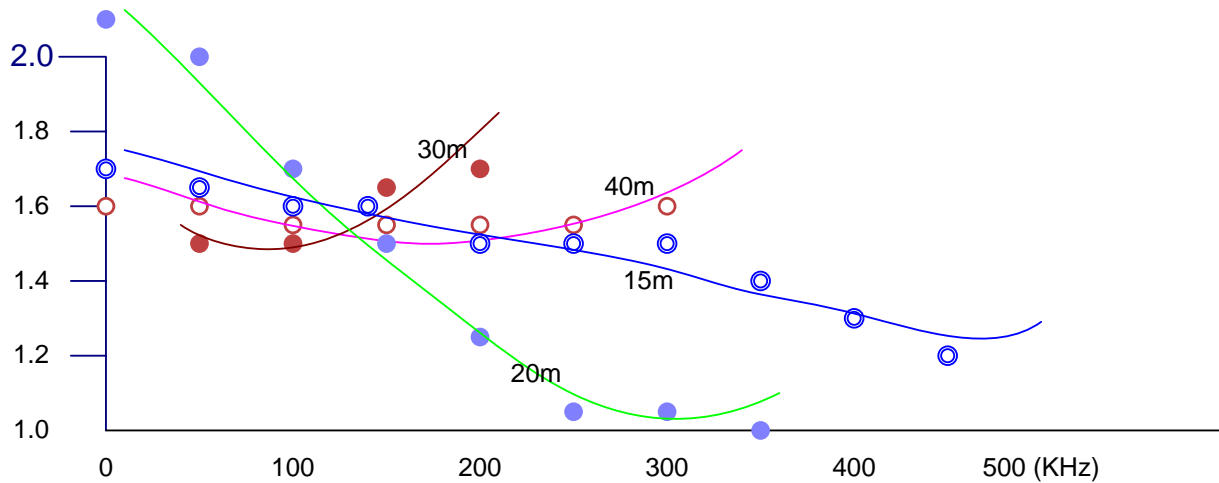


Mission Viejo Special (continued from pg. 4)

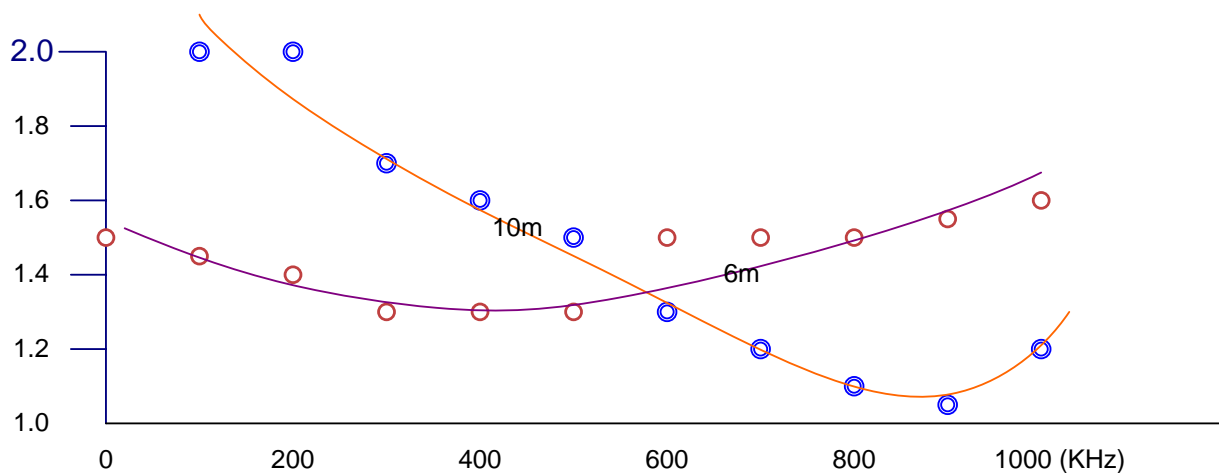
Below is the SWR chart for each band, except for 17m and 12m bands. Those two bands are $5/8 \lambda$ long and not resonant, thus require a tuner to create the match. SWR curves for those bands are meaningless.

All other bands are meeting the "less than 2.0 SWR" criteria, and I am using them with the tuner turned off. The measurement is made at the feed point of the antenna, using MFJ 926 antenna analyzer.

SWR chart for 40 to 15 meter bands, less 17 and 12 meter. Measured 7/19/14



SWR chart for 10 and 6 meter bands. Measured 7/19/14



On the Air

I built up this antenna from just a single element 40 meter vertical since last December. It was this past July when it ultimately took its present form. During that time, I (very lightly) participated in ARRL DX Contest, Hawaiian QSO party (with 10Watt SSB), All Asian DX Contest, etc. with satisfactory results. No, I did not win any awards, but I only ran for a few hours each. However, I did get my signals answered, on 40m, 20m and 15m bands I worked (mostly in CW 100Watt). In case you were wondering, yes, I am very happy with the way the antenna is working.

For the lack of any measurement objective measurement, I cannot quantify how well it is working. But both in terms of receiving and transmitting (i.e., getting call back), it compares favorably to all antennas I ever had in my backyard.

More theory and construction details are available at my private web site, w6si.com



SOARA Fair Pictures

A special thank you goes to all our presenters at the August (SOARA Fair) Meeting. Here are some pictures of the event (meeting).



Steve, KD6MHL, offers HF tips and demonstrations to onlookers.



Mike, K6MSM, shows the fun of an HF digital mode (JT65)



Phil, WA6LDI & Dave, K6DBW, explain the excitement and rewards of QSLing.



Charlie, WA6RUZ, explains a ham radio "go-kit".

7 2014 SOARA Calendar THE PROPAGATOR

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
General Meeting 7:00 PM	27	24	17	21	19	16	21	18	15	20	17	—
Program	Baker to Vegas	Rally	Digital HF	AR Video	Spring Auction	Field Day Prep	AreaBFE	SOARA Fair	Mesh Network	TBD	Fall Auction	—
VEC Testing	27	24	17	21	19	At Field Day	21	18	15	20	17	—
Educational Classes (Starts)	Tech 8		General 5			Tech 4				Ext 1 Gen 4,5	Tech 15,16	
SOARA Saturdays (9am)	Feb 1	Mar 1	22	26	24	-	26	23	20	25	22	—
SOARA T-Hunt	12	9	9	13	18*	8	13	10	14	12	9	—
Board Meeting	Feb 3	Mar 3	24	28	Jun 2	23	28	25	22	27	24	—
Special Events	Quartzfest 19-26	Yuma 14-15	Palm Springs 15	Visalia DX 3-6	Dayton 16-18	ARRL Field Day 28-29		SOARA Picnic 3	ARRL SW 12	JOTA 18-19		SOARA Holiday Party 7
Major HF Contests		ARRL DX-CW 15-16 CQWPX RTTY 8-9	ARRL DX-SSB 1-2 CQWPX SSB 29-30		CQWPX CW 24-25	ARRL Field Day 28-29			CQWW RTTY 27-28	CQWW SSB 26-27	CQWW CW 23-24	
Volunteer Events	OC Chili Run 25	Paws Fur Pink 15 OC Chili Run 22	OC Chili Run 22 Baker to Vegas 22	Vision Quest 5	HD Tr. 3 OC Mar. 4 Memorial Day 1/2 26	ARRL Field Day 28-29					Stache Dash 23	



SOARA meets at the Mission Viejo Community Center, 26932 Veterans Way, Mission Viejo, the third Monday of every month at 7:00 PM. For the months of January and February the third Monday is a holiday and the meeting is held on the fourth Monday.

License Exams: Amateur License Exams are given prior to SOARA meetings. **Exams are at 6pm.** Prior registration is not required and walk-in applicants are welcome. For further information, email Sean Reigle, AJ6B, at aj6b@soara.org.

SOARA Library:

SOARA has many amateur radio related books such as hand books, books about electrical theory, etc. available to lend out to club members. Contact Heiko Peschel ad6oi@soara.org for more info.

Web Site: SOARA maintains a web site with current club information. The URL is: <http://www.soara.org/>

Repeaters: The Laguna Beach, San Clemente, and Trabuco repeaters are open. The Santiago Peak repeaters are closed. For details or questions on the repeaters contact the Repeater director, KG6GI.

	2m	—	147.645	—	(110.9)	Laguna Beach
	2m	—	146.025	+	(110.9)	San Clemente
	2m	—	145.240	—	(110.9)	Trabuco
D-Star	2m	—	146.115	+	(K6SOA C)	Laguna Beach
	220	—	224.100	—	(110.9)	Laguna Beach
	220	—	224.640	—	(123.0)	Santiago Peak. (C)
	440	—	445.660	—	(110.9)	Laguna Beach
D-Star	440	—	445.700	—	(K6SOA B)	Laguna Beach
	440	—	447.180	—	(131.8)	Santiago Peak. (C)
D-Star	1.2G	1282.600	—	(K6SOA A)	Laguna Beach	

Nets:

UHF/VHF (447.180, 147.645 & 224.640): Tuesdays 8:00 PM

D-Star (146.115 C module): Wednesdays 8:00pm

40 meter HF (7.200 MHz +/- for QRM), Sundays 8:00 AM.

Gordo Net (HF 7.250 MHz +/- for QRM), Weekdays 8:30AM

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