www.wvara.org September 2016

The Heterodyne

Newsletter of the West Valley Amateur Radio Association

September Meeting

Tri-Band J-Pole Antenna
By Edison Fong, WB6IQN

Wednesday September 14
Meeting Starts at 7pm

Meeting Location:
American Red Cross,
Silicon Valley Chapter
2731 N. First Street at Plumeria Dr
(southwest corner) in San Jose

Map at www.wvara.org/meetings.html

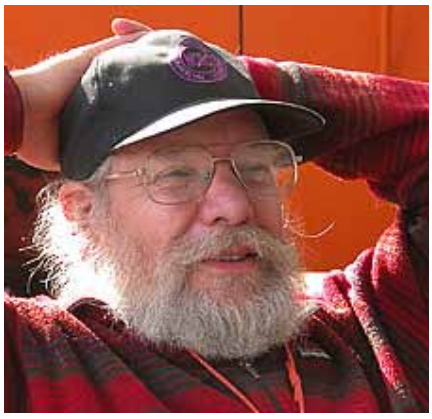
WVARA Repeaters (W6PIY)		
Band	**Frequency**	**PL**
6 Meters	52.580- MHz	151.4 Hz
2 Meters	147.39+ MHz	151.4 Hz
1.25 Meters	223.96- MHz	156.7 Hz
0.70 Meter	441.35+ MHz	88.5 Hz
0.23 Meter	1286.2- MHz	100 Hz

Club Net

WVARA's club net is on the W6PIY repeaters each Tuesday at 8:30 pm. All repeaters are linked together during the net. The net script can be found at www.wvara.org/net.html .

Visitors Are Welcome!

President's Letter



A Portable Wire Beam

A number of people have asked for details about the portable 2 element 20 meter wire beam I have be hauling around the country. Elsewhere in this issue of the Heterodyne, there is an article describing it in detail.

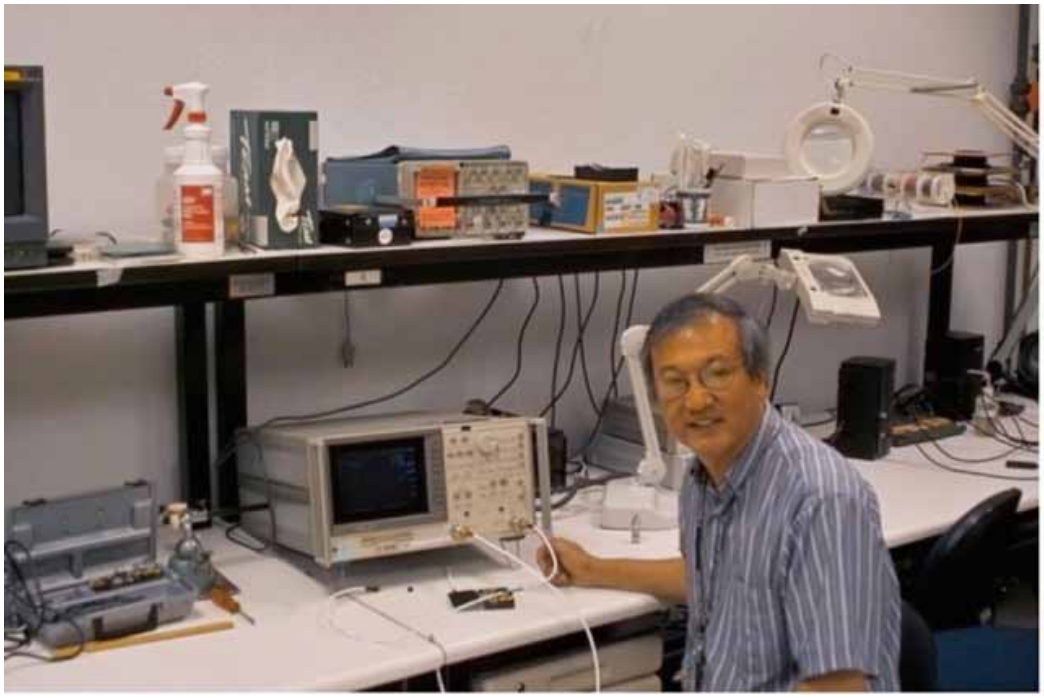
I first built an antenna using this basic design in 2013 and it is still in use above my roof. I then build a second version, designed as a portable antenna. The portable version has served in a number of locations, but most frequently when I operate from the family house in Peterborough, New Hampshire. I have contacted 80 DXCCs and 48 states using these antennas. Most recently, we used one of the antennas at the WVARA summer picnic last August.

It's been a fun project. I encourage others to play with antennas like this one.

73 Bill AE6JV

About the Meeting

Tri-Band J-Pole Antenna
By Edison Fong, WB6IQN



Our next meeting is 7pm this Wednesday, September 14. Edison Fong, WB6IQN, will unfold the secrets of his unique design for a single-feed, tri-band J-pole antenna. I saw this presentation at last year's PACIFICON Antenna Symposium. Ed does a great job of sharing his excitement in antenna design. Be prepared to learn a bunch.

Meeting Location: Meeting Room 5 at the Silicon Valley Chapter of the American Red Cross, 2731 N. First Street at Plumeria Drive (southwest corner) in San Jose. Most of us come in through the side entrance on the southwest side of the building — look for our red WVARA sign. And remember, visitors are welcome!

Club Web Page: www.wvara.org

Ham Crams

The ham cram will be Nov. 12 in the Los Gatos Emergency Operations Center starting at 8:00 AM. People interested in attending should contact Peter Hertan, K6PLH <phertan at alum.mit.edu>. There will be a license exam session starting at I think 4:00 PM as part of the ham cram.
73 Bill AE6JV

Pacificon 2016
Friday Oct 14 - Sunday Oct 16

San Ramon Marriott
2600 Bishop Drive
San Ramon, CA 94583

www.pacificon.org

A Portable 20 Meter Two Element Wire Beam
Bill Frantz, AE6JV

An article in QST peeked my interest in building a wire beam. I started playing with designs in co-coaNEC and ended up with a 2 element beam with good SWR over the entire 20 meter band. I have used several antenna based on this design since 2013. They have proven to be reliable and rugged. Photo 1 shows a view of the antenna set up using two photographic light stands in Ely, Nevada.

Photo 1

Design

The antenna consists of a driven element and a reflector. The driven element is 9.5 meters (31.2') long and the reflector is 11.12 meters (36.5') long. They are separated by 2.73 meters (9.1') using diagonal spreaders which are 2.84 meters (9.32') long. There is a common-mode choke at the feed point. It is supported from each end using a bridle made of nylon rope. It stretches about 17 meters (56') from bridle to bridle, so it takes a bit of space between the end supports. Figure 1 gives a schematic of the antenna design.

When I take it to our summer place in New Hampshire, I use some spreaders cut from wooden poles found in the wood lot. It is supported by the house and a rope thrown into a tree. See photo 2.

When there are no natural supports, I use two photographic light stands which are 10' and 12' tall respectively. With these supports, the antenna is much lower than is ideal, but it does make QSOs.

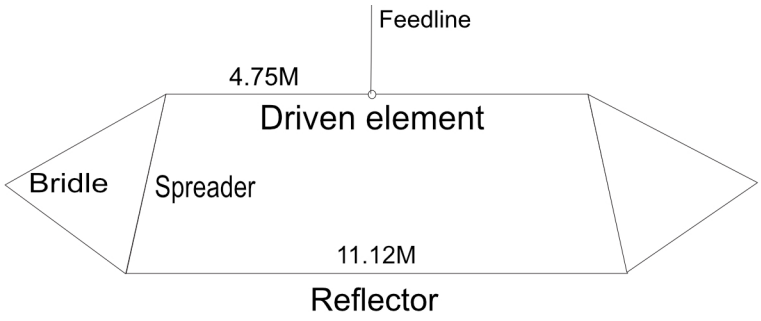


Figure 1

Photo 2

Modeling Results

Figure 2 shows the modeling results when the antenna is at 10 meters over poor ground. The main lobe is relatively broad with good side rejection and usable rear rejection.

Figure 3 shows the antenna with the driven element tilted 30 degrees up. Note that the pattern is slightly distorted but still quite usable. Figure 4 shows the antenna with the driven element tilted 30 degrees down. This pattern is even closer to the level pattern. It isn't essential to level the antenna when erecting it in the field.

Figure 5 shows the antenna at 3 meters, about the height when using the two light stands. The pattern has been strongly affected and the takeoff angle is quite high. It is certainly not ideal, but it does still offer some advantage over a dipole.

Modeling results show limited sensitivity to the separation between the elements. The most obvious effect is that the SWR becomes higher as you move away from the 2.5 to 2.75 meter range.

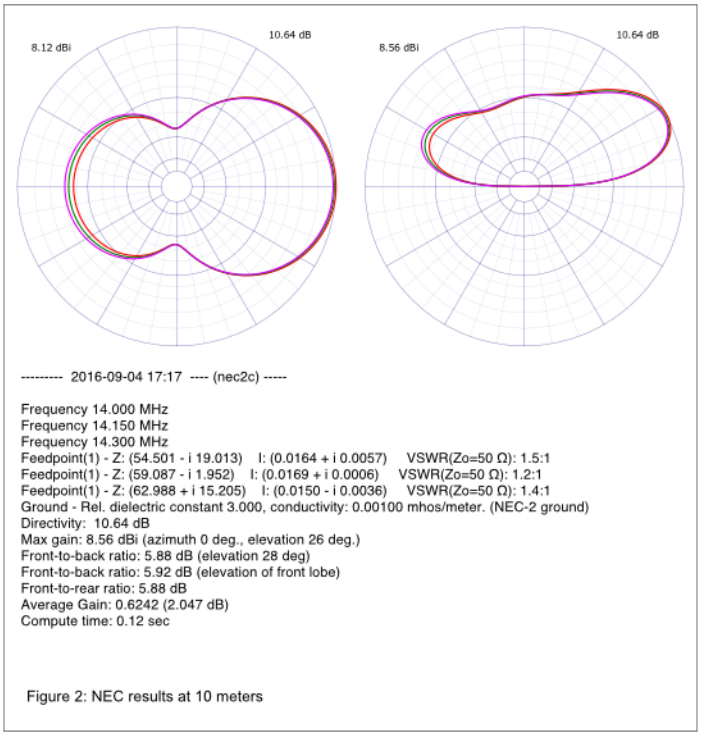


Figure 2

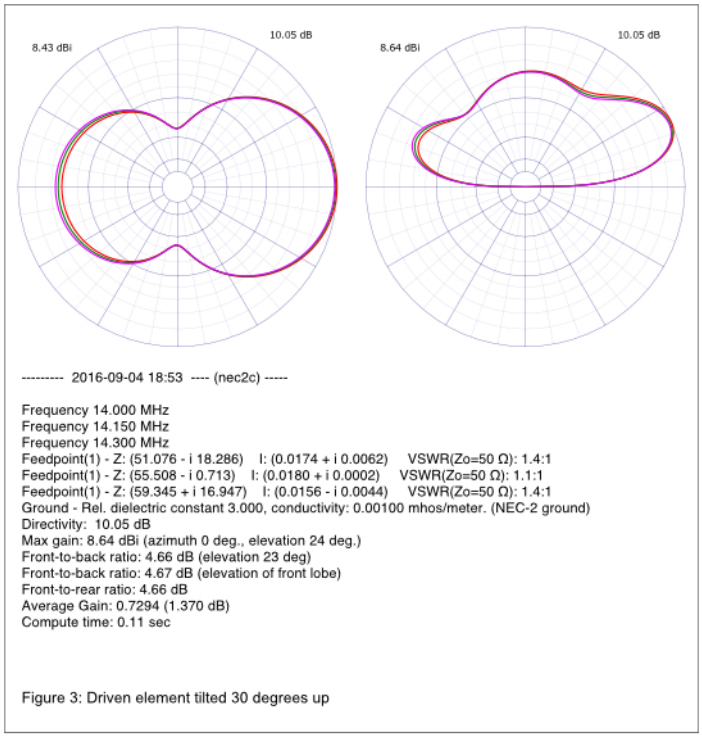


Figure 3

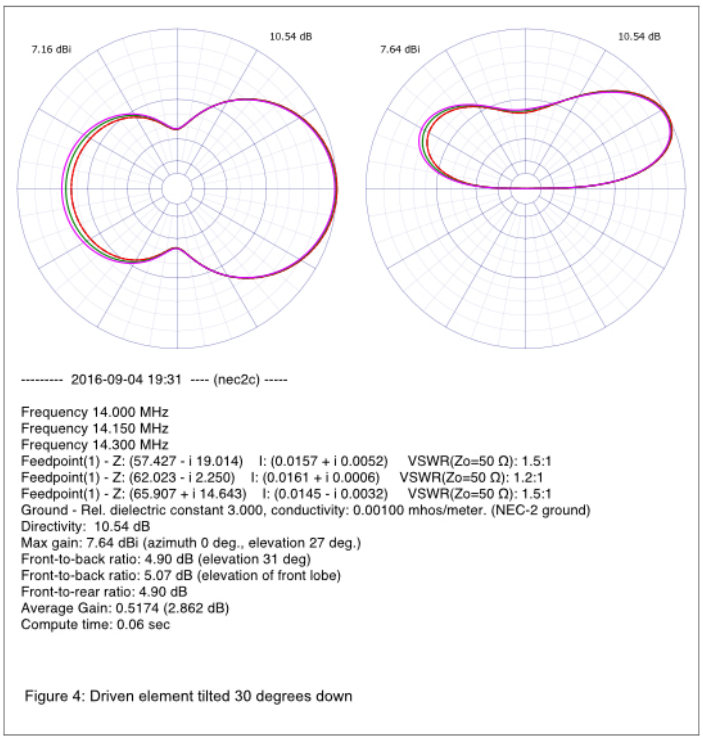


Figure 4

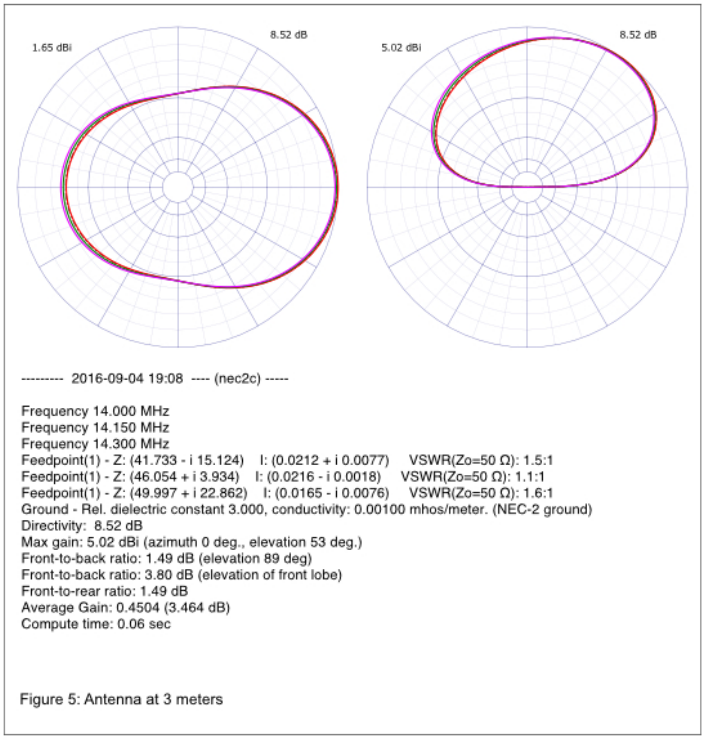


Figure 5

Construction

The elements are made from #26 copper clad steel wire, Wireman #534. The ends are looped back on themselves making a loop for tying the nylon cord bridle. Heavier gage wire can be used, and works well in the version of this antenna permanently set up at my home. With #12 wire, modeling results show better SWR with a driven element length shortened to 10.1 meters.

The feed point is protected with a 3/4” schedule 40 plastic pipe cap which contains the common mode choke. The choke consists of 7 bifilar turns wound on a FT50B-43 core. The length of the driven element determined by during tuning is 70 cm shorter than that suggested by modeling results. I think this discrepancy is due to the common mode choke. If you change the choke, the length needed for the driven element may change. Experiment is in order.

A feed line of RG-58U is permanently attached to the antenna and supported by a wire bolted to the plastic pipe cap. The feed line should be long enough to reach the ground in normal deployments to avoid supporting feed line with the RF connectors.

To build the feed point, first drill two holes near the closed end of the cap to pass the antenna wires. Also drill a hole for an attachment screw for feed line strain relief. Attach a short piece of wire to the screw which will be wrapped around the feed line to provide strain relief.

Cut two pieces of wire at least 2 feet longer than is needed for the driven elements. Tie overhand stopper knots in these pieces of wire about 1 foot from the end. Use the 1 foot ends to wind the common mode choke. Feed the other ends through the holes in the cap and draw the choke into the cap. Solder the feed line to the two short ends from the choke insulating with shrink wrap tubing. See photo 3. Push the feed line end into the cap and fasten the strain relief wire to it fixing it in place with shrink wrap. See photo 4. After testing, fill the cap with Shoe Goo.

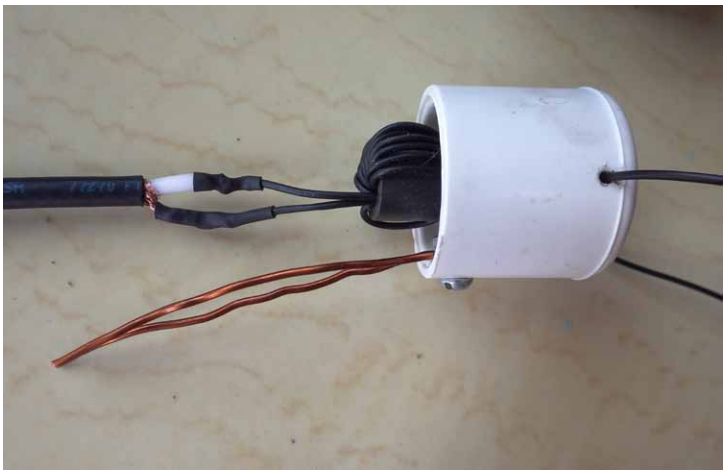


Photo 3

Photo 4

The spreaders are made from 1/2” and 3/4” fiberglass pipe from DX Engineering (parts DXE-FT0500-8 and DXE-FT0750-8). These pipes are cut into 2 foot sections for portability. Small pieces of the 3/4” pipe are epoxied to the 1/2” pipe to act as stops and then 3 sections of the 1/2” pipe are alternated with 2 sections of the 3/4” pipe to make the spreader. See photo 5. Because, when in use, the joints are under compression, they need no additional fastening. They have show good reliability in winds up to 40 MPH. The end of each spreader is slotted so the antenna wire can slip into the slot to hold the spreader to the antenna. See photo 6.

If I had it to do over again, I would make the spreaders from 1/2” fiberglass pipe, joined with joints made from about 5-10 cm of the 3/4” fiberglass tubing. I would epoxy the joint to one of the spreader pieces and slip the other spreader piece into the resulting socket during assembly. These spreaders would be smaller and lighter than the ones I actually built.

The bridles are tied from 7.5 (25’) meter lengths of thin nylon cord. Dacron antenna rope should work just as well. The leg lengths I use are 3.11 meters (10.2’) to the reflector and 4.05 meters (13.28’) to the driven element. The total length isn’t critical, but the placement of the support loop is. The support loops in both bridles should be moved until the antenna hangs more or less level. Once the correct location has been located, the loops should not need to be re-tied when deployments are changed.

Photo 5

Photo 6

The whole antenna winds onto a bobbin which keeps the wires, coax, and cords from becoming tangled, making deployment and decommissioning quick and easy. The bobbin is made from slats of wood and wood doweling. See photos 7 and 8.

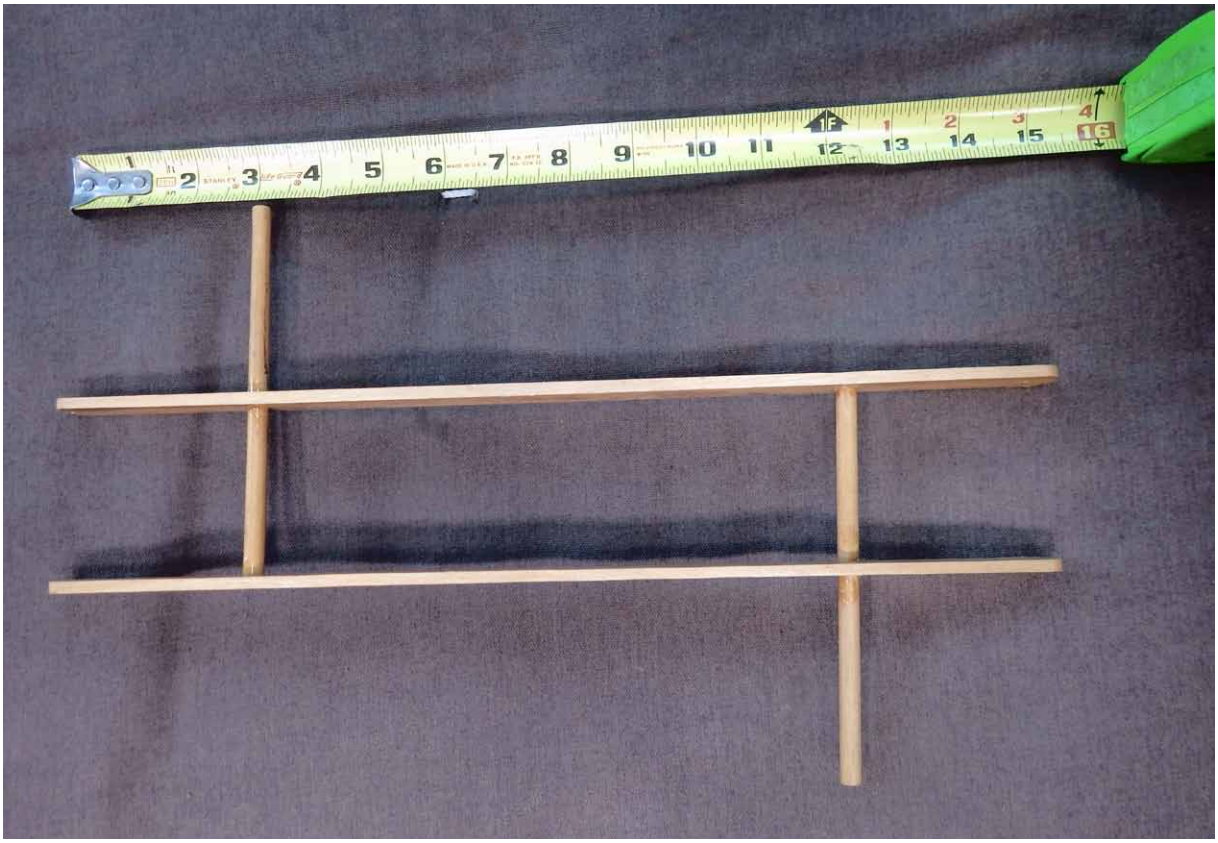


Photo 7

Photo 8

Treasurer's Report

It's been a quiet month for club finances. The only activity was the receipt of dues from one member - thank you! August financial reports are attached. Now that the flea market finances have settled down, we are in good shape; up $1,057.94 for the year, with $11,822.36 in the bank. There is more than enough cash on hand to handle any unexpected expenses that may arise. I won't be at the September meeting. If you have any questions, you can reach me at treasurer <treasurer@wvara.org>. See everyone in Oct.

Peri Frantz
KI6SLX
WVARA Treasurer
treasurer at wvara dot org

WVARA
Statement of Activity

January through August 2016	2016 Q1	Aug '16	2016 Q3 to date	08/31/16 TOTAL
Income				
4100 — Program Income				
4110 — Membership Dues				
4111 — Indiv. Assn. ($15)	375.00	15.00	15.00	495.00
4112 — Indiv. Repeater (12)	180.00	12.00	12.00	264.00
4113 — Fam. Assn. ($20)	140.00	0.00	0.00	160.00
4114 — Fam. Repeater ($18)	108.00	0.00	0.00	108.00
Total 4110 — Membership Dues	803.00	27.00	27.00	1,027.00
4150 — Flea Market Reciepts	0.00	0.00	0.00	3,809.15
Total 4100 — Program Income	803.00	27.00	27.00	4,836.15
4200 — Misc. Income	0.12	0.00	0.04	0.28
4800 — Donations	210.00	0.00	0.00	213.00
Total Income	1,013.12	27.00	27.04	5,049.43
Expense	0.00		0.00	0.00
5300 — Flea Market Expenses	2,300.00	0.00	19.98	2,552.56
5100 — Administrative Expenses	0.00		0.00	0.00
5110 — Finance Fees Paid	18.18	1.08	1.08	26.28
5140 — Web Hosting Expense	59.40	0.00	0.00	59.40
5160 — Officer Awards	0.00	0.00	0.00	29.33
Total 5100 — Administrative Expenses	77.58	1.08	1.08	115.01
5200 — Membership Expenses	0.00		0.00	0.00
5240 — Summer Picnic	0.00	0.00	0.00	85.00
5210 — Badges	16.00	0.00	0.00	16.00
Total 5200 — Membership Expenses	16.00	0.00	0.00	101.00
5500 — Program Expenses	0.00		0.00	0.00
5540 — Misc. Expenses	0.00	0.00	0.00	979.71
6000 — Repeater Expenses	0.00		0.00	0.00
6100 — Repeater Maintenance	0.00	0.00	0.00	243.21
Total 6000 — Repeater Expenses	0.00	0.00	0.00	243.21
Total 5500 — Program Expenses	0.00	0.00	0.00	1,222.92
Total Expense	2,393.58	1.08	21.06	3,991.49
Net Income	-1,380.46	25.92	5.98	1,057.94

WVARA
Statement of Position
As of August 31, 2016

09/08/16

	Aug 31, '16
ASSETS	
Current Assets	
Checking/Savings	
1000 — Financial Accounts	
1100 — Checking	4,353.24
1200 — Savings	4,494.75
1300 — Paypal	2,854.14
1900 — Cash	
1910 — Petty Cash	120.23
Total 1900 — Cash	120.23
Total 1000 — Financial Accounts	11,822.36
Total Checking/Savings	11,822.36
Total Current Assets	11,822.36
TOTAL ASSETS	11,822.36
LIABILITIES & EQUITY	

2016 West Valley Amateur Radio Association Board

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