NCCC-PVRC Joint Webinar

Wednesday, October 14, 2009

160M Helically Wound Vertical

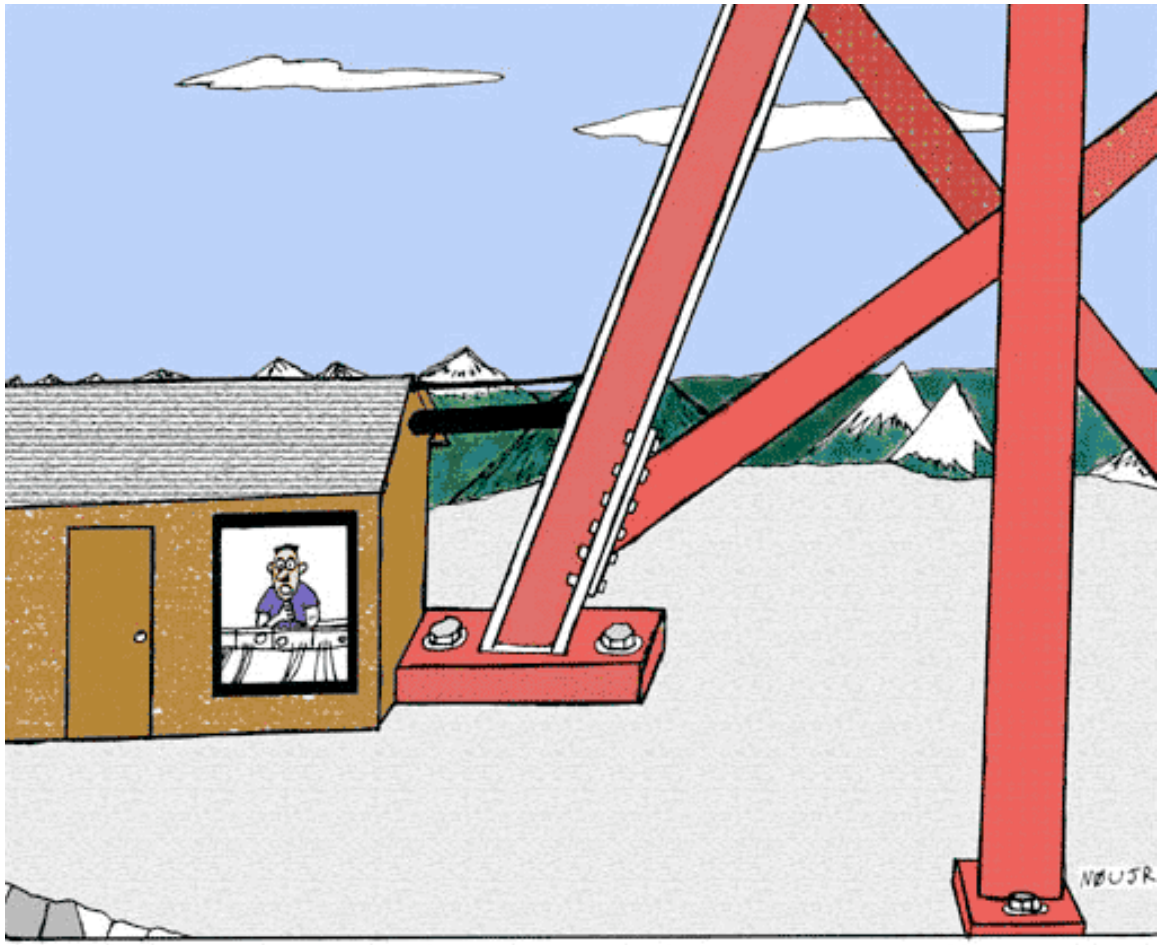
"Beam Me Up, Scotty – No Excuses!"

John Miller, K6MM

Me

- Born in Buffalo, raised in Syracuse
- Novice in 1958 (WV2BQJ)
- Moved to CA in 1976
- Interests: Contesting, DXing, VHF, ARES, New Technologies, Promoting Amateur Radio & Recruiting
- Member: MLDXCC, NCDXC, SARA
- Officer of No. Calif. Contest Club

In Search Of The Perfect 160M Antenna



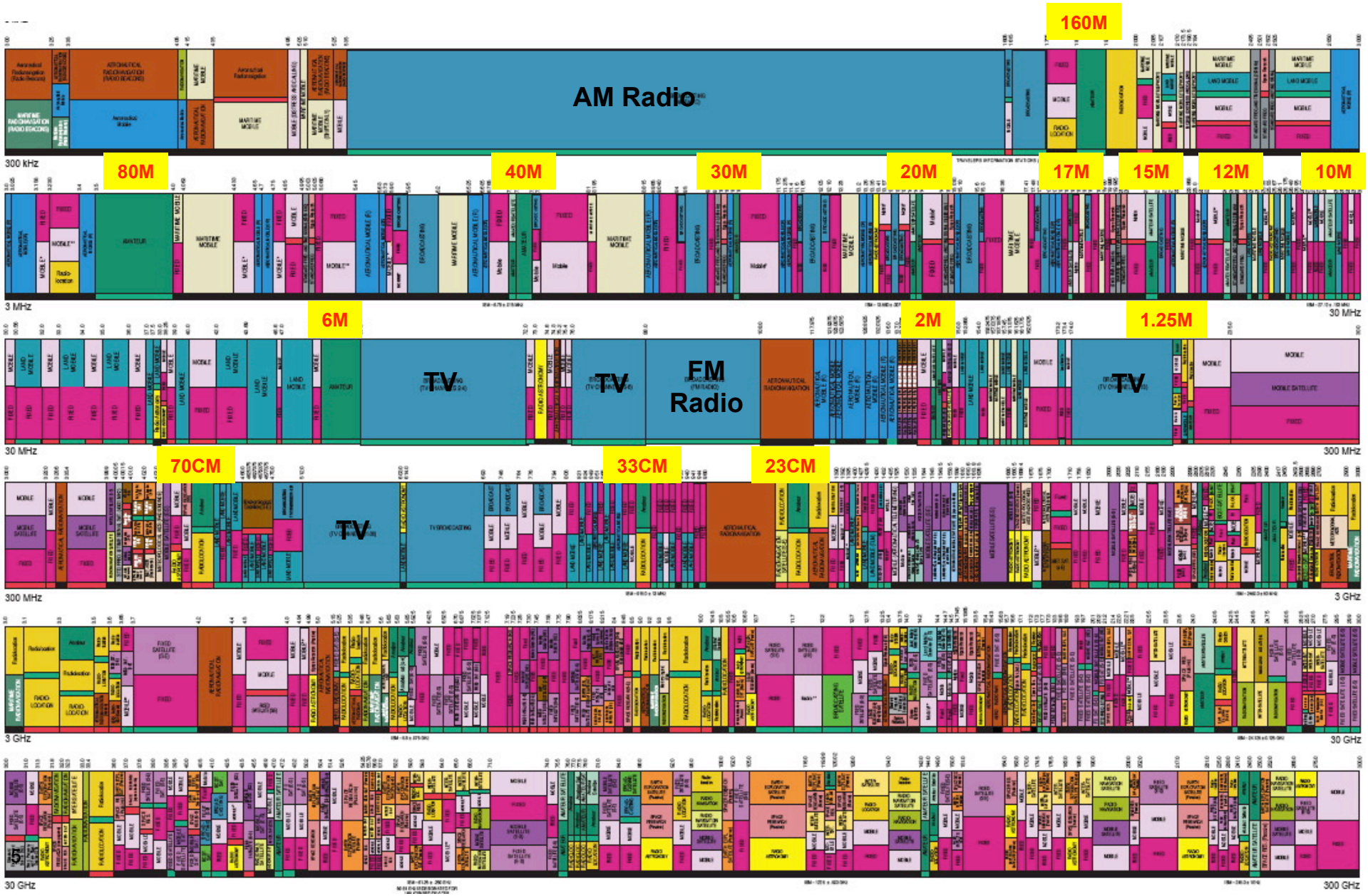
"Yes I really am running just 5 watts QRP...although I suppose I do have an above average antenna system..."

Agenda

- Brief History of 160M Band
- Operating Challenges
- Antenna Options
- 160M HWV Construction Steps
- Performance Data
- Feedback From QST Article

U.S. Frequency Allocations

15 Amateur Radio Bands



160M = Topband

- Oldest Amateur Band
- Survived threat of military and commercial interests in early 1930s (e.g. LORAN)
- Covers range of 1800-2000 kHz, lowest frequency allocation in Amateur Radio
- Sits just above the AM broadcast band, with similar propagation characteristics
- If you listen between 1500-1600 kHz, you'll hear a station 1,000 miles away at night, but only 100 miles away during day.
- The "Night-Time Band"

160M = Gentleman's Band

- FCC does not regulate 160M for band segmentation by mode. Legally any mode can operate anywhere.
- To avoid conflicts, a "Gentleman's Agreement" band plan was developed by an ARRL Ad Hoc committee with input from users of 160M.

1.800 – 2.000 CW
1.800 - 1.810 Digital Modes
1.810 - CW QRP
1.830 – 1.835 CW DX Window
1.843 – 1.853 Phone DX Window
1.843 - 2.000 SSB, SSTV
1.910 - SSB QRP

- On-Air Etiquette: Respect DX windows; Commitment to QSOs and QSLs in a Non-Competitive Environment

Stew Perry, W1BB

Stewart Perry W1BB, whose station has been in use since 1912. Stew holds the first DXCC issued for exclusive 160 meter operation.

Stew Perry Topband Distance Challenge – "The Friendliest 160M CW Contest". Last weekend of December. QSO Exchange: 4-character Grid Square

- The most distinguished "Gentleman" and most widely recognized 160M enthusiast
- First transatlantic QSOs in early 1930s
- DXCC-160M #001 after 33 years of operation
- Regular monthly newsletters and many technical contributions
- Promoted international cooperation

160M Operating Challenges

A. Propagation

1) Ionospheric Absorption: Abs = K/Freq

- Lower the Frequency, Greater the Absorption
- 160M signals expected to be weaker than HF bands.

2) Refraction (Bending): Ref = K/Freq

- Lower the Frequency, Greater the Refraction
- 160M signals = shorter hops with more loss.

Conclusion: Best 160M Propagation in Winter Months When Darkness is More Prevalent

160M Operating Challenges

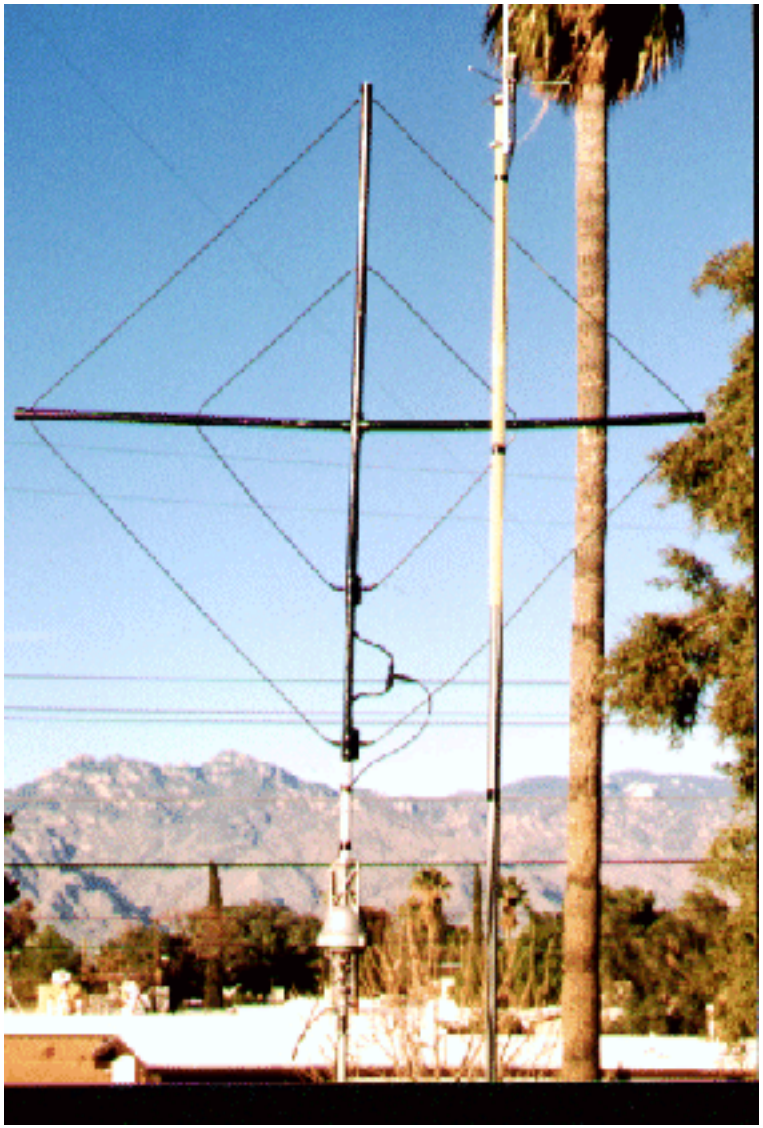
B. Noise

1. Man-Made: machinery, power lines, appliances
2. Atmospheric: weather-related

Receiving Antennas:

1. Beverage – Highly directional long wire terminated with non-inductive resistor. Usually 1 λ = 500 ft. = Needs lots of land.
2. Loops – Many types

Receiving Loop Antennas



Many 160M Resources

- Topband Mailing List – Very Active List
  - www.contesting.com Click on "Topband"
  - Searchable archives from 1996 to date
- "Low-Band DXing" – John Devoldere, ON4UN

  "The more active I am on 160M, the more I am convinced on how little we know about propagation on that band."
- "DXing On The Edge-The Thrill of 160M" – Jeff Briggs, K1ZM

  "The Biggest Task Yet Unmet Is Figuring Out Just What Makes 160M Tick."

Why Operate 160M ?

- One of the last frontiers for radio propagation enthusiasts
- Populated with highly dedicated experimenters
- Overcome The Antenna Challenge
- Challenging Contest & Award Opportunities
- Become part of the 160M tradition
- Help cure Topband Disease

Symptoms of Topband Disease

(First described by Tree Tyree, N6TR)

- Desire to be on the radio at Sunrise
- Desire to be on the radio at Sunset
- Desire to be on the radio at all times in between Sunset and Sunrise
- Desire to struggle for months to work a single station in a new country.
- Never being satisfied with the antenna system and constantly trying new ones.

Symptoms of Topband Disease

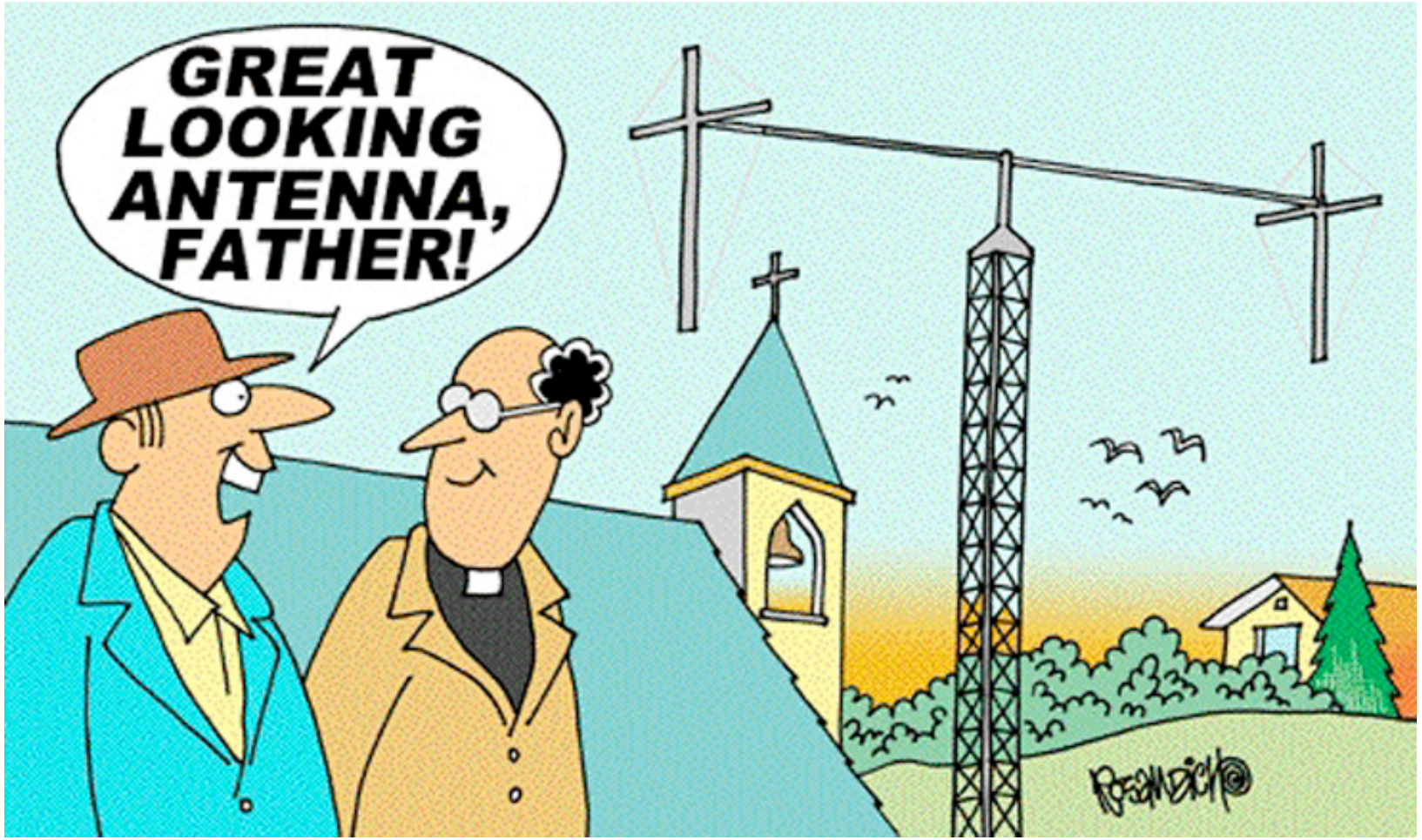
- During a rare fantastic opening, the afflicted only comes down to see the family after each new country is worked.
- Drinks lots of water before going to bed - wakes up in the wee hours of the morning to see if a new country can be found.
- Has problems getting to work on time during the winter months.
- THE ONLY CURE: MORE SUNSPOTS!!

  (makes lower bands more attractive)

160M Summary

- Unpredictable propagation
- Weak signals
- Short hops
- Lots of noise
- 10 acres of land + Huge Antenna
- Threat of Topband Disease
- 160M = "The Masochistic Band"
- Play or Pass?

Need Some Divine Guidance…



Or Rely On The Great Philosophers..

"When You Come To A Fork In The Road, Take It."

Yogi Berra

My QTH

My QTH

- Typical San Jose city lot – a little larger than most
- Not enough room for 160M dipole or inverted-L
- Limited options because of swimming pool and overall layout
- Can't go Horizontal? Go Vertical.
- What Type? Size? Full Wave? ½ Wave? ¼ Wave?

Physical Length (L) vs Frequency (F)

Formula For 1/2 Wave Antenna:

L = 468/F

At F = 1.825, L = 256 feet

Formula For 1/4 Wave Antenna:

L = 234/f

At F= 1.825, L = 128 feet

NR5G

¼ λ
130 ft
Vertical with
120 #16
tinned copper
radials

W7IUV

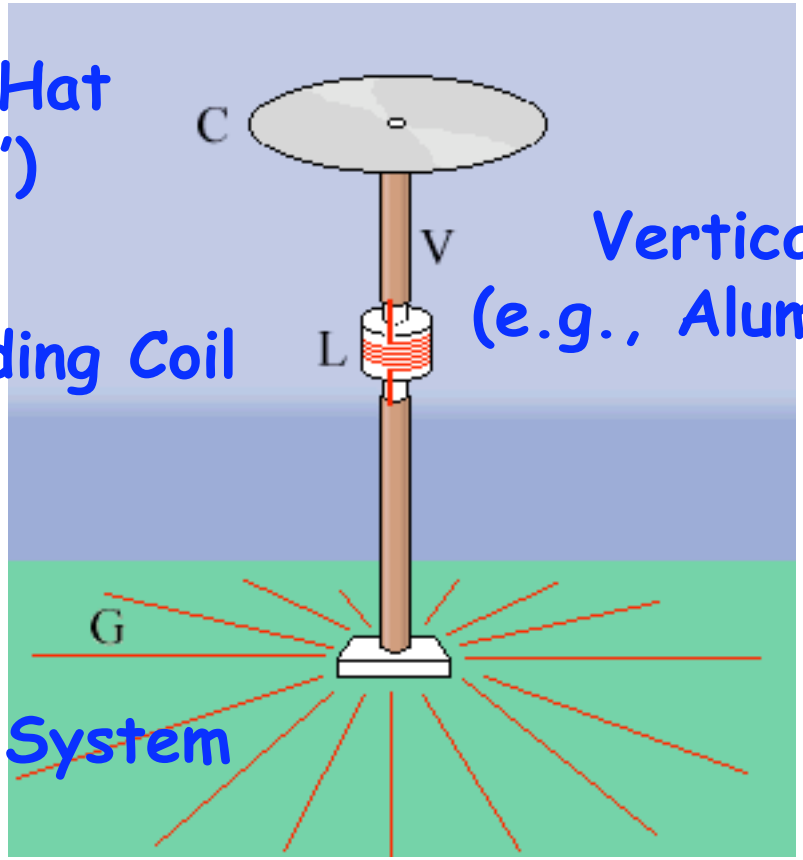
0.2 λ
90 ft
Vertical with
82 radials

How About A Shortened Vertical?

- Proven design for other bands
- Readily available materials
- Fits my lot size
- Won't break the bank
- Need the exercise

Components of Shortened Vertical

Capacitance Hat
("Top Hat")



Vertical Radiator
(e.g., Aluminum, Copper)

Loading Coil

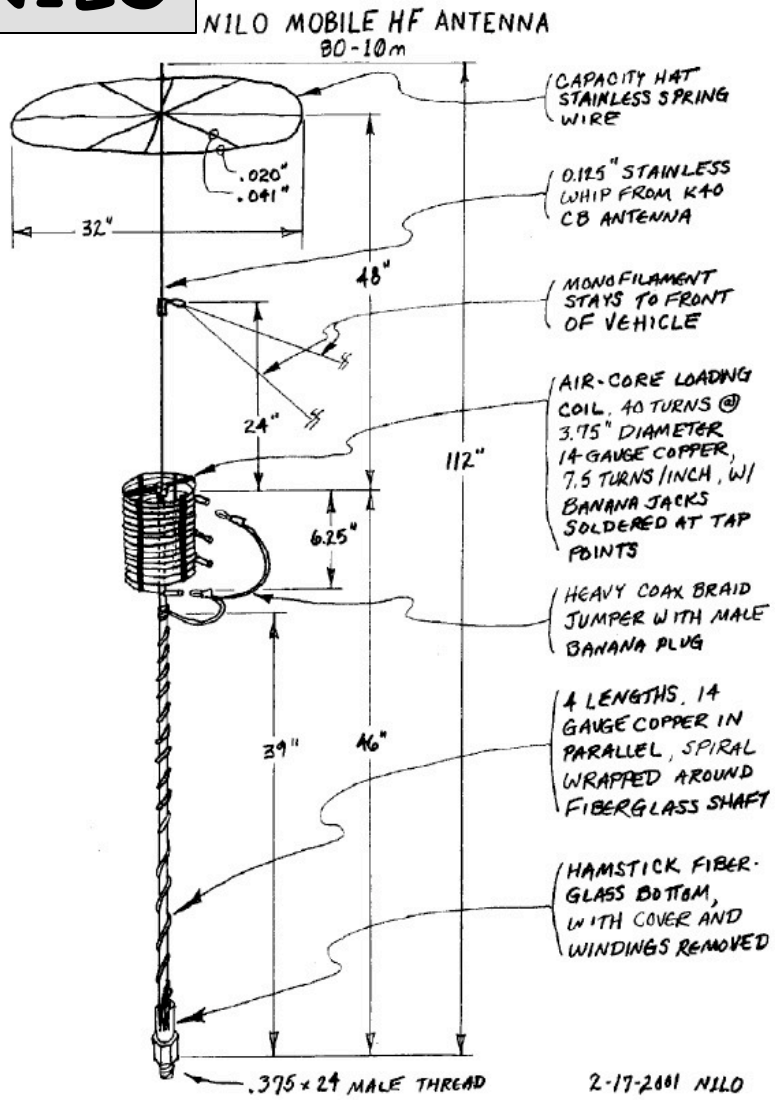
Ground System

Capacitance Hat ("Top Hat")

- A network of wires that is placed at the top of an antenna either to increase its bandwidth or to lower its resonant frequency.
- CH does not radiate a significant amount of signal, but increases the effective height (i.e. electrical length) of the vertical radiator.
- With no CH, RF current in the antenna decreases toward the top and the upper portion of the radiator puts out very little signal.
- Increasing the effective height of the antenna also reduces losses caused by nearby shrubs and buildings.

Mobile Antenna w/Top Hat

N1LO



KU4B

Radial Ground System

- Primary Purpose: Reduce ground losses.
- RF current flows between vertical and earth.
- Radials provide "shield" or path to collect and return RF current back to base.
- Maximizes antenna efficiency and strength of radiated field.
- Radials also help to minimize loss of low-angle elevation pattern.
- Type: Ground Screen or Radials?

1. Square Ground Plane ("Ground Screen")

- A conductive metal screen such as chicken wire is suspended above the earth or laid on the ground to make a big counterpoise (artificial ground-plane) for the antenna system.
- Several sections soldered or welded together to make a large square patch of conductor, and the vertical radiator is suspended above the middle.
- Challenge: Need a large screen area – possible but not practical for small lots. Best for broadcast stations (although most use 120 ground radials instead).

2. Ground Radials

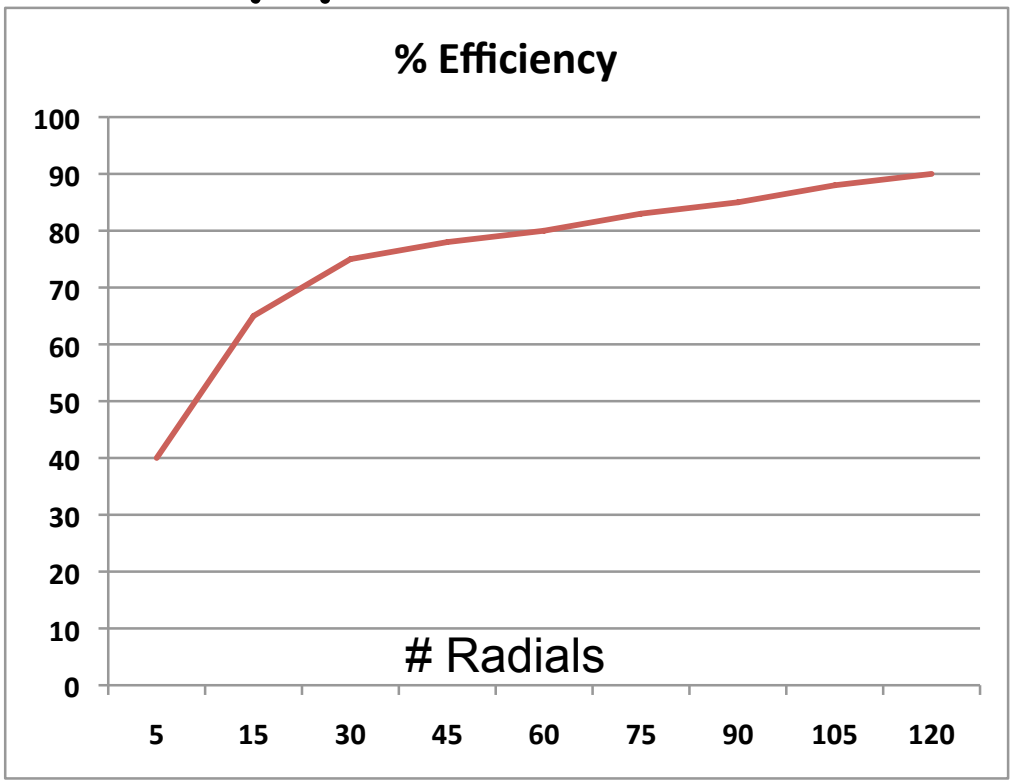
- How long?
- How many?
- Type?
  - Buried in the ground?
  - Laid on the ground surface?
  - Elevated?
- Pattern?

Ground Radials – How Long?

- Ideal = $\frac{1}{4}$ wavelength, or about 120 ft. each for 160M.
- Practical: 30-60 ft. each should work
- Some say height of the vertical is maximum length needed.
- Typical: #14 insulated solid copper
- #12-22 insulated solid or stranded is good. Lots of other choices. What's in your garage?

Ground Radials – How Many?

- "More is better", up to a point.
- Increasing the number of radials from 2 to 15, significantly increases signal strength.
- >60 radials only produces 1 to 2 dB of gain



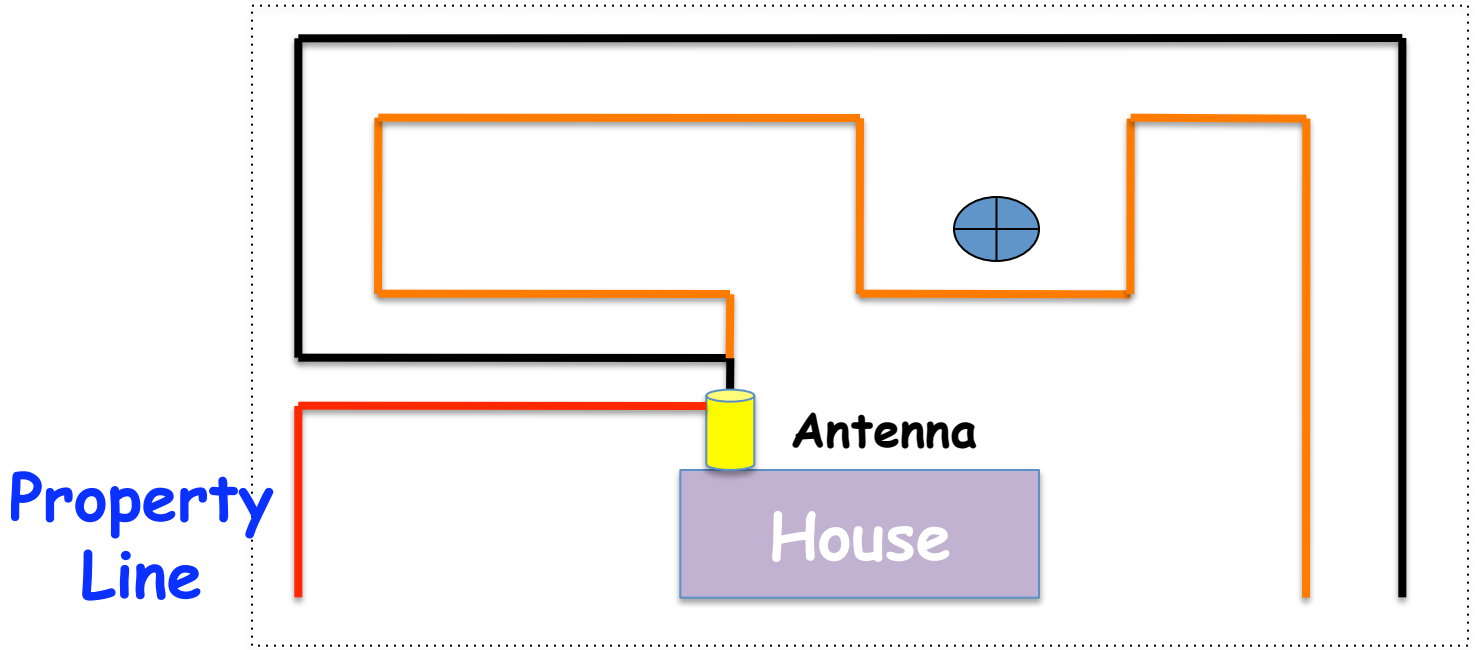
Ground Radials – Type?

- Buried is good = safety, appearance. Use bare copper wire.
- On the surface is fine too. Insulated.
- Staple wire down to grass, and let it grow around the wire.
- Some use in conjunction with small "chicken wire" ground screen.
- Some use elevated radials instead of ground radials. Conclusions vary.

Ground Radials - Pattern?

- Start with 8 – 20 radials, ideally in a 360 degree pattern
- Use as many straight-line directions as practically possible away from the base of the antenna.
- Get in as much wire as you can
- Tie into chain link fences, heating ductwork, tool sheds, plumbing, under the house- everything large and metal

Ground Radials Layout Will Depend On Your QTH



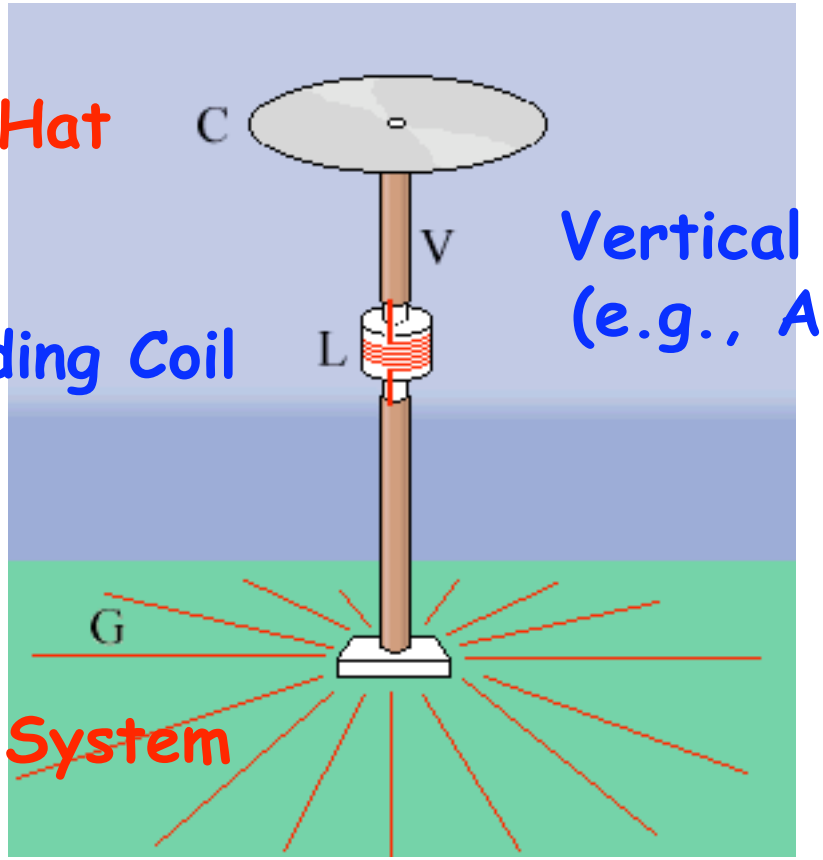
Key Factors: Placement of Antenna & Property Geometry

Recall: Shortened Vertical

Capacitance Hat

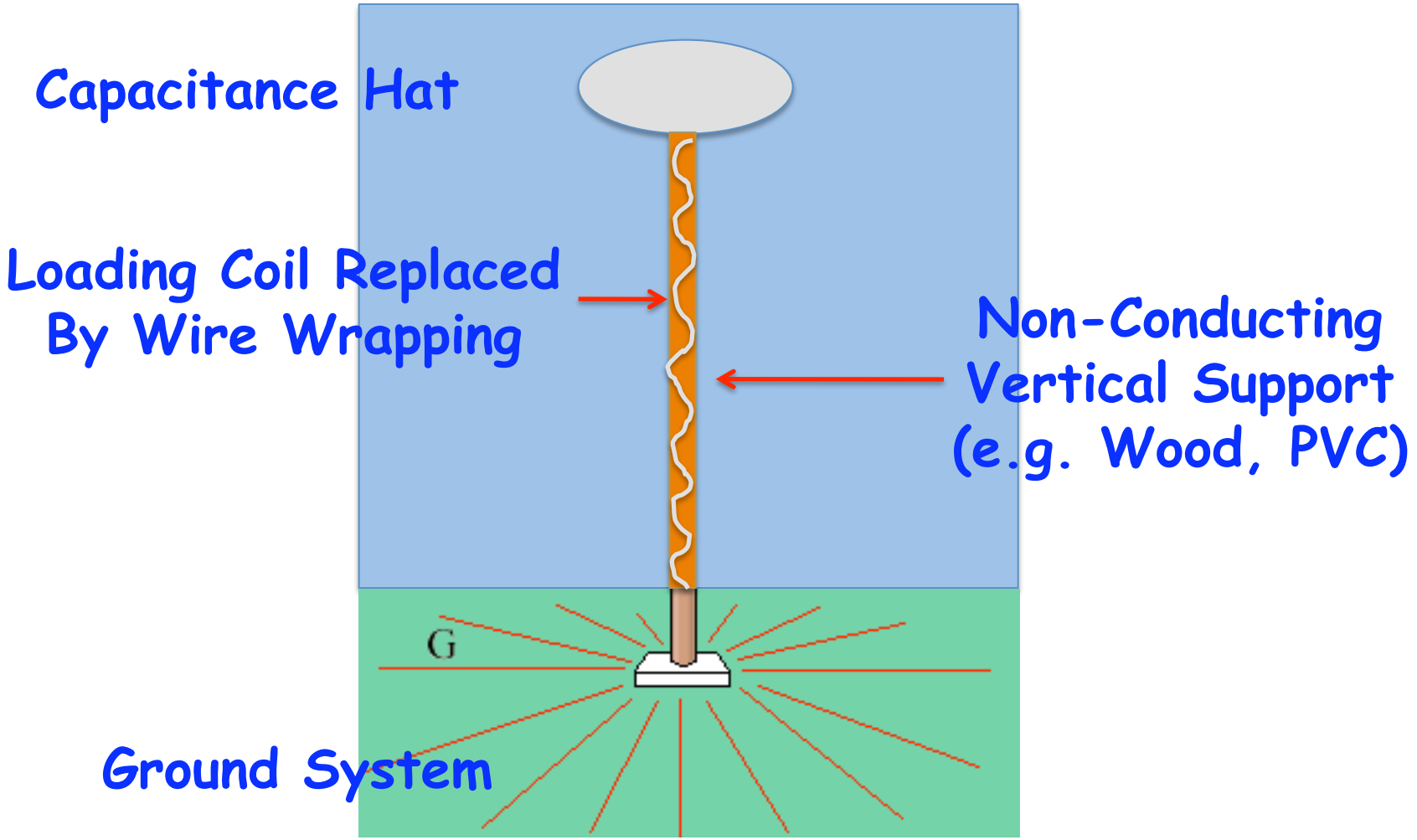
Loading Coil

Ground System



Vertical Radiator
(e.g., Aluminum)

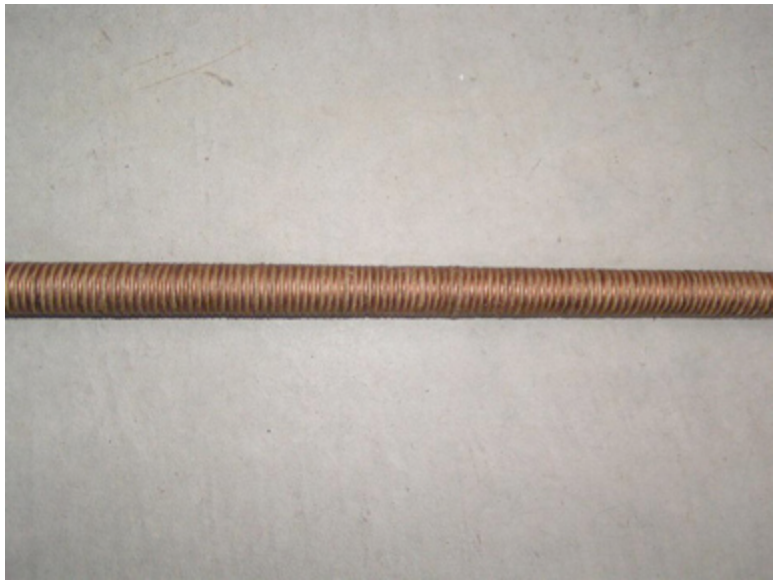
Helically-Wound Vertical



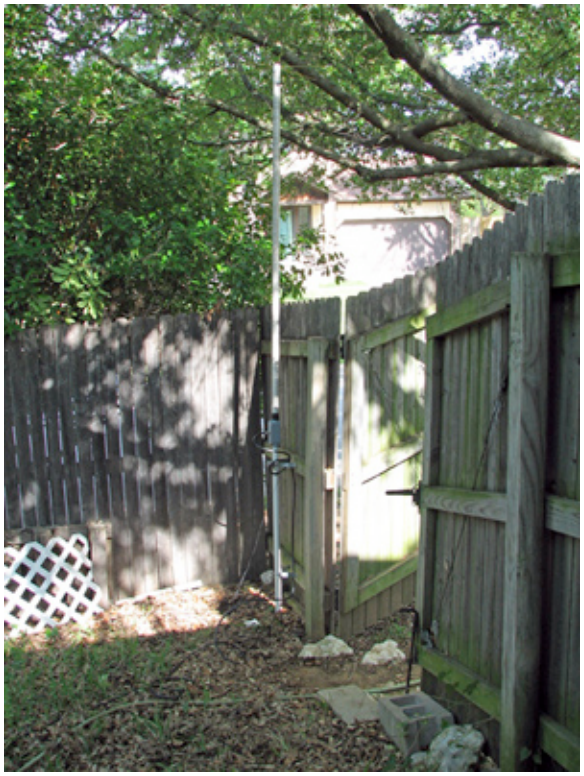
Helically Wound Verticals

- Been around for decades
- Popular throughout Europe, where residential lot sizes are typically fairly small
- Biggest advantage: low height for a given frequency
- Trade overall efficiency & performance for convenience & adaptability

W6ADZ 40M HWV
Fiberglass Fishing Pole

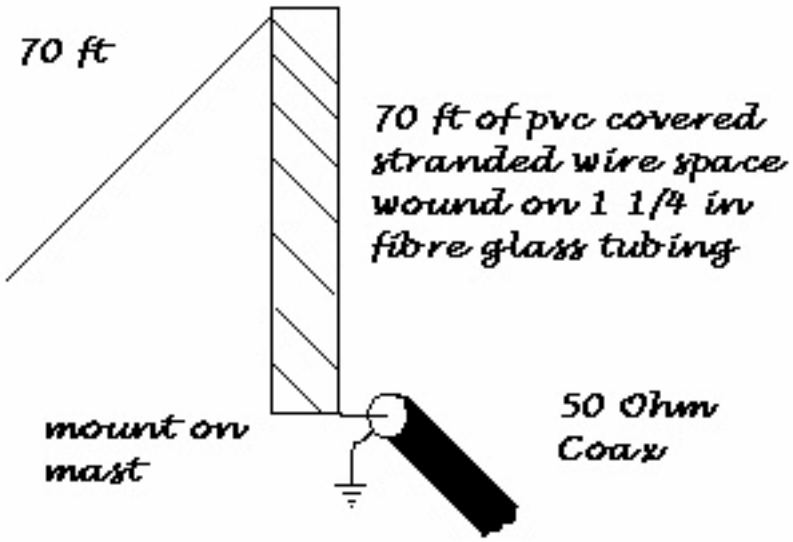


W5JCK 75M HWV
Broomstick Vertical



M0MCX 40M HWV
Fiberglass Fishing Pole

G3YCC 160M Hybrid HWV Fiberglass or PVC



- 140' Insulated Wire
- 5'6" long, 1/5 " diameter
- Turns 0.5" apart
- 70' Around Tubing
- 70 feet of wire acts as a loading wire and slope down from the top of the coil to near ground level.
- Coax fed to the base of the coil, with the shield or braiding going to earth.

M0VEY 160M HWV
PVC

- 128' of wire
- 4' PVC, 2" in diameter
- Four x 4' Ground Spikes
- 3' Copper Tank Buried 4' Deep
- Two x 125' radials

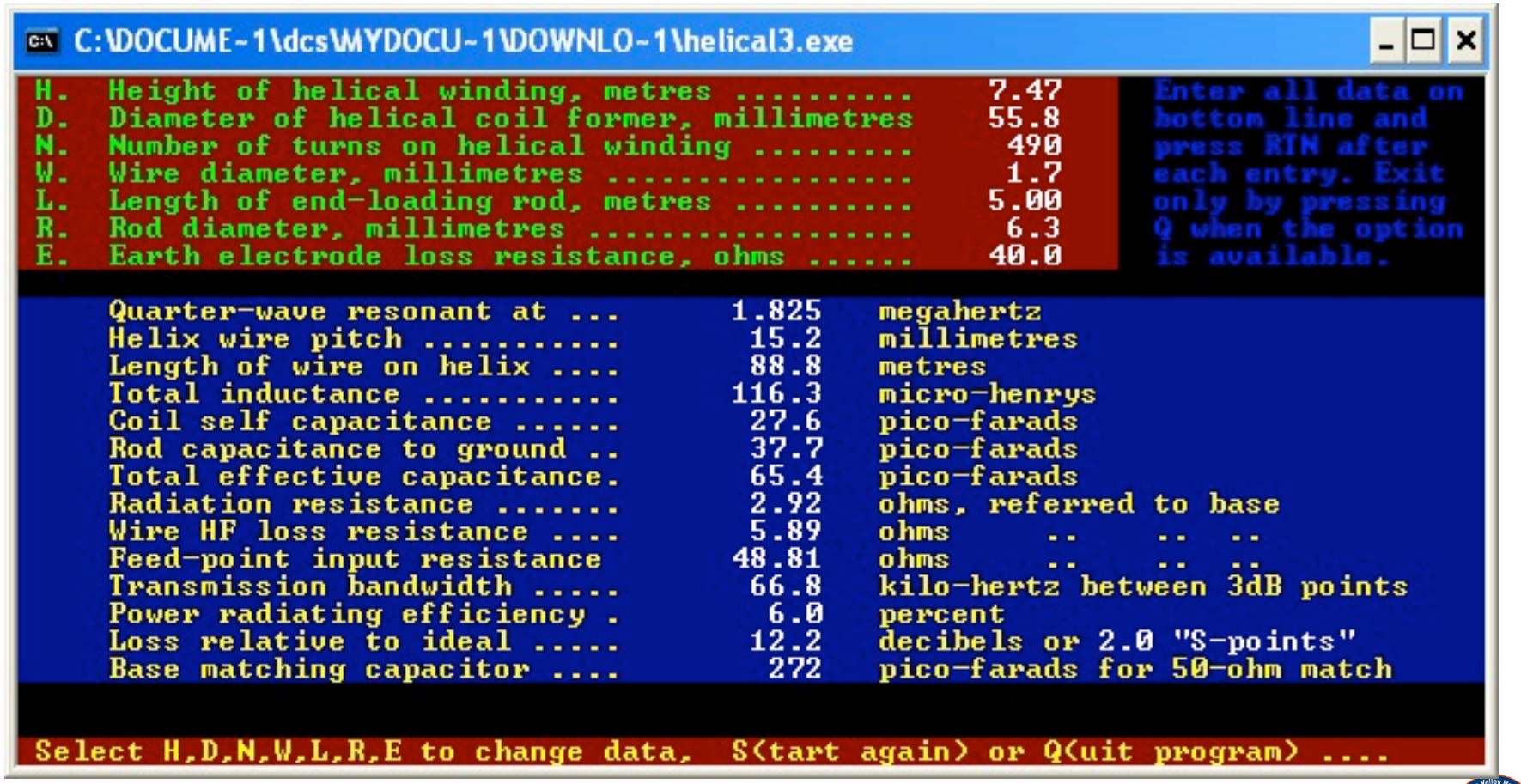
Antenna Modeling Software

- EZNEC
- 4NEC2 by Arie Voors
- R.J. Edwards, G4FGQ
  http://www.smeter.net/antennas/short-helical.php
  - Simple DOS-based program
  - Optimized for a variety of HWV antenna parameters

HWV Modeling Software

R.J. Edwards, G4FGQ

http://www.smeter.net/antennas/short-helical.php

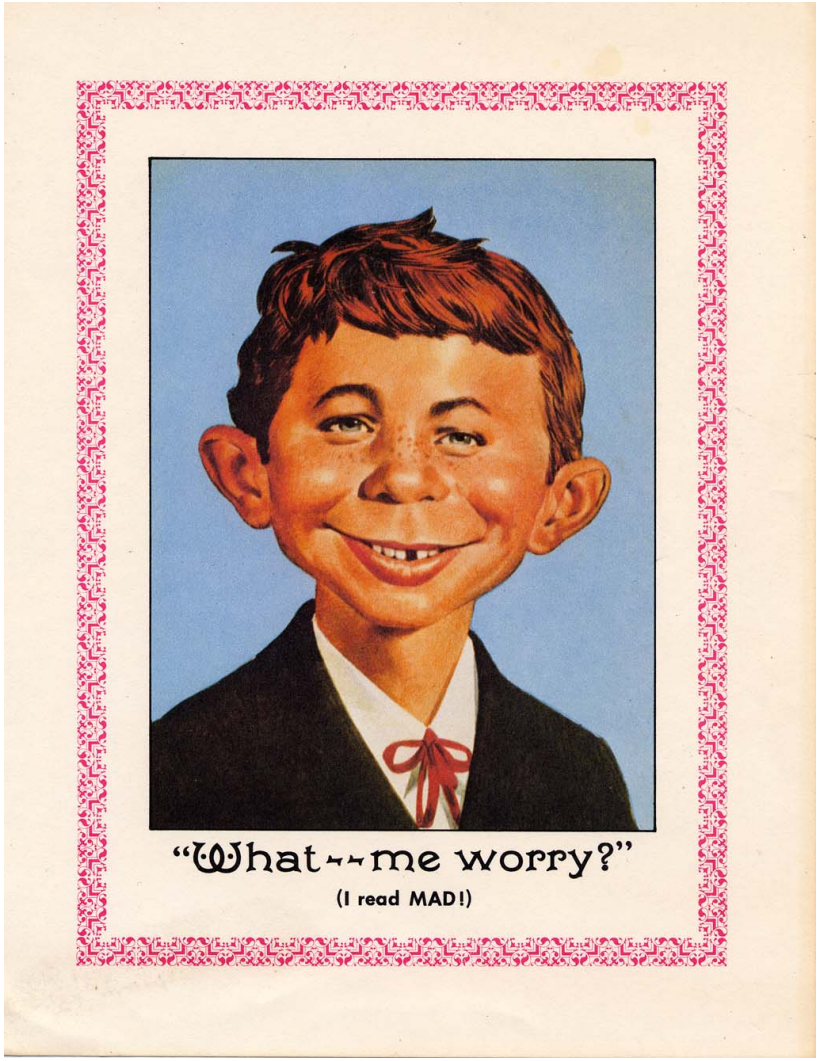


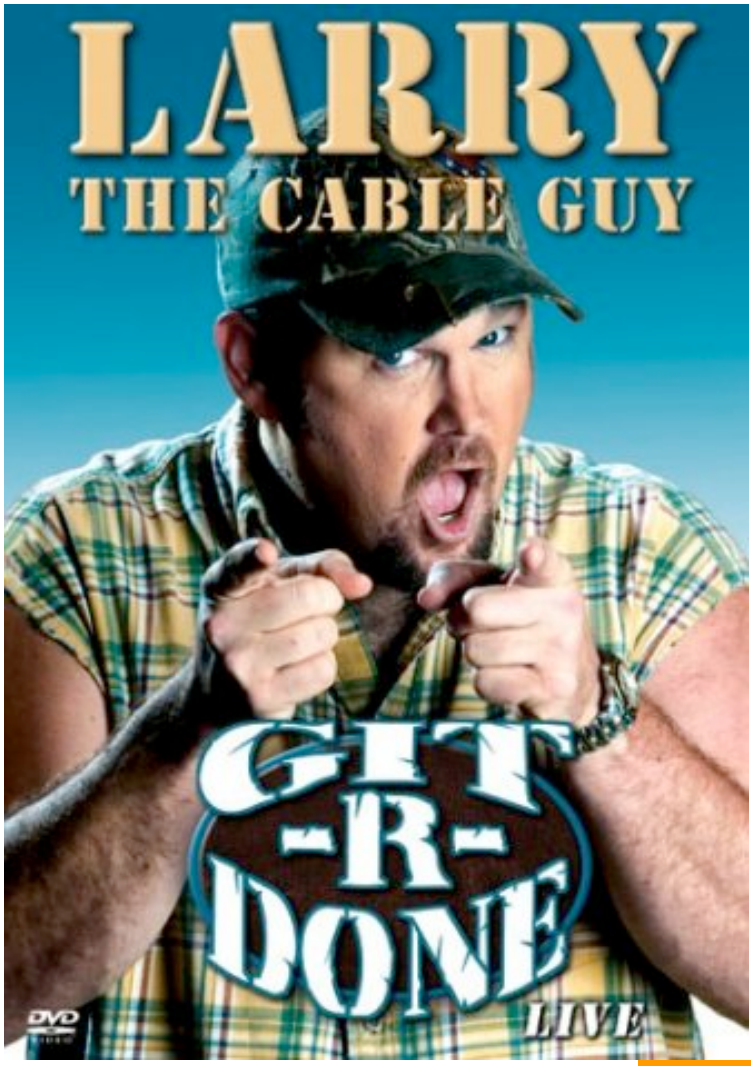
HWV Modeling Software

Typical Calculation:

For a target frequency of 1.825 MHz, use 256 feet of #14 gauge 1.6 millimeter diameter wire wrapped around 24.5 feet of a 2.2 inch outside diameter pipe using 19.5 turns-per-foot with an average pitch of 0.62 inches.

3 Words Of Wisdom





Construction Chronology

- First prototypes Summer/Fall 2003
- 3 x 10 ft. 2" PVC, PVC couplings
- Good first start – but not sturdy enough.
- Better: Use three different diameter PVC pipes, telescope sections, and strengthen with carriage-bolts and duct tape.

Construction Steps

Step 1: Paint The PVC

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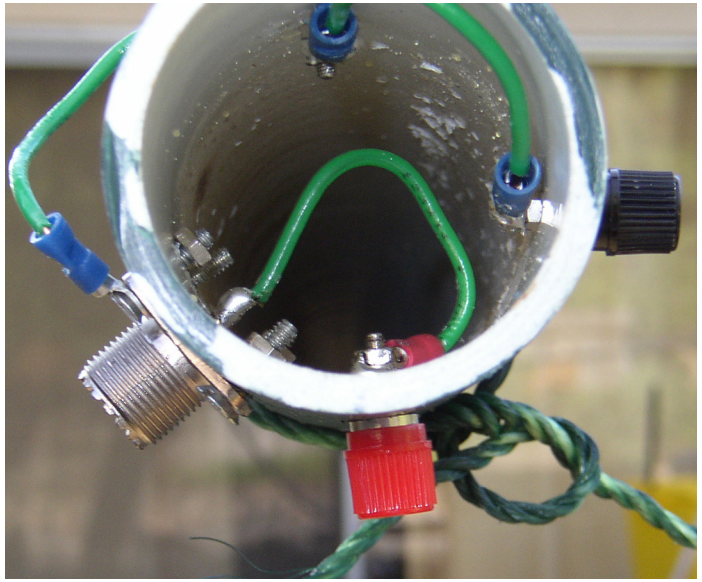
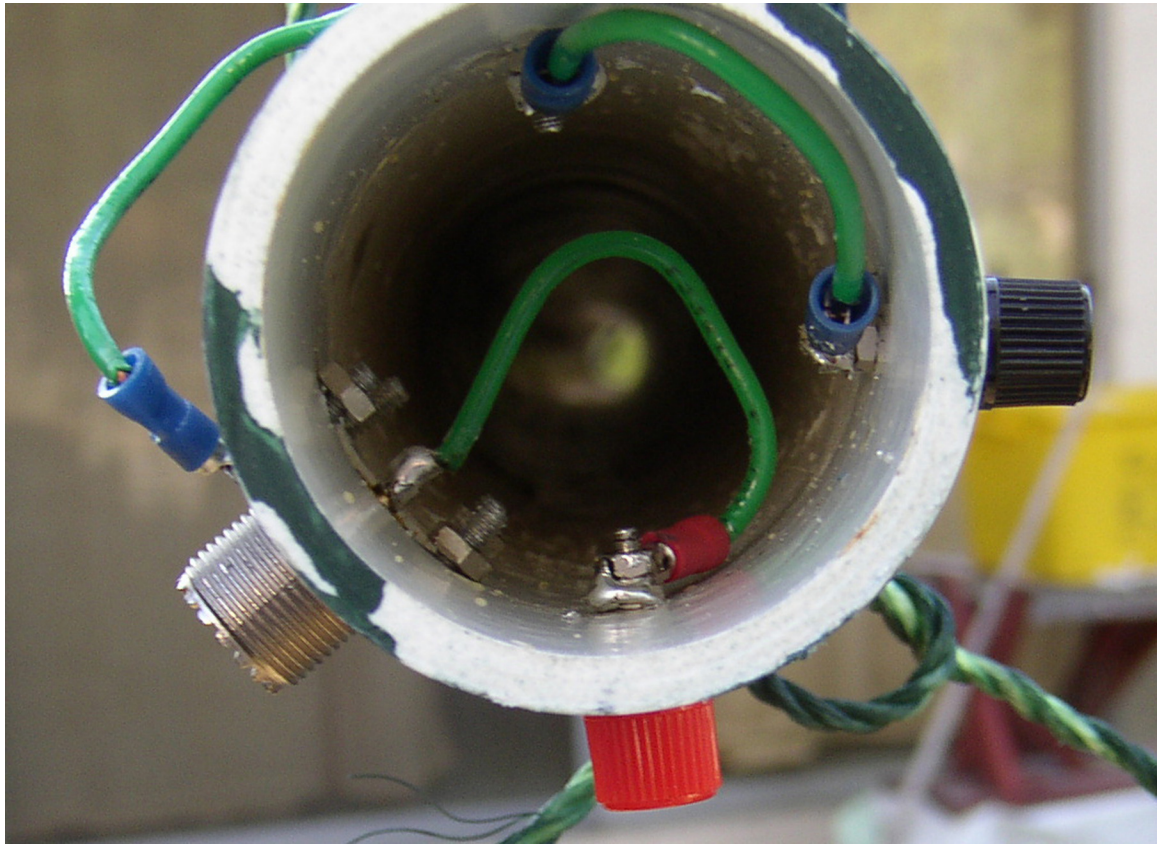
Painted & Dry
2", 1.5", 1" PVC Pipes, each 10 ft.

Step 2: Install Coax, Antenna & Ground Connectors



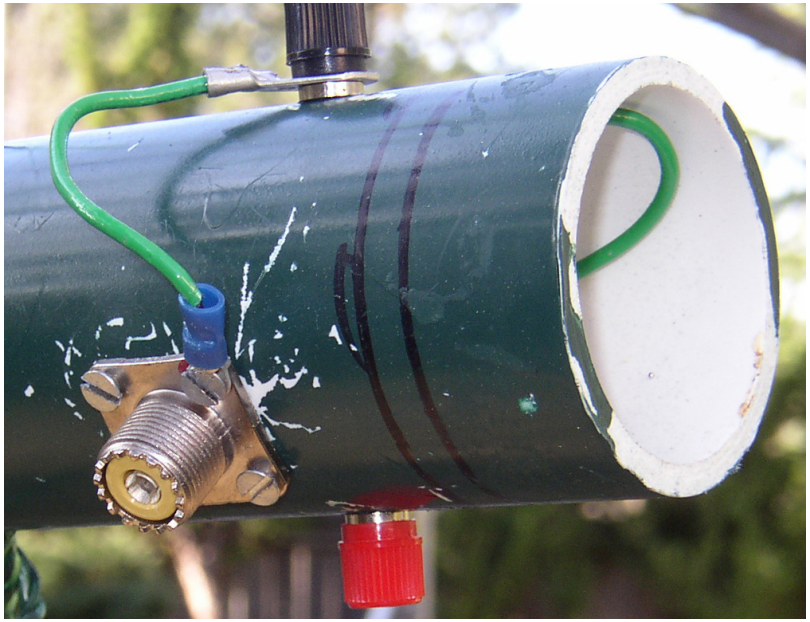
Bottom of 2" PVC:
SO-239 + 3 Binding Posts

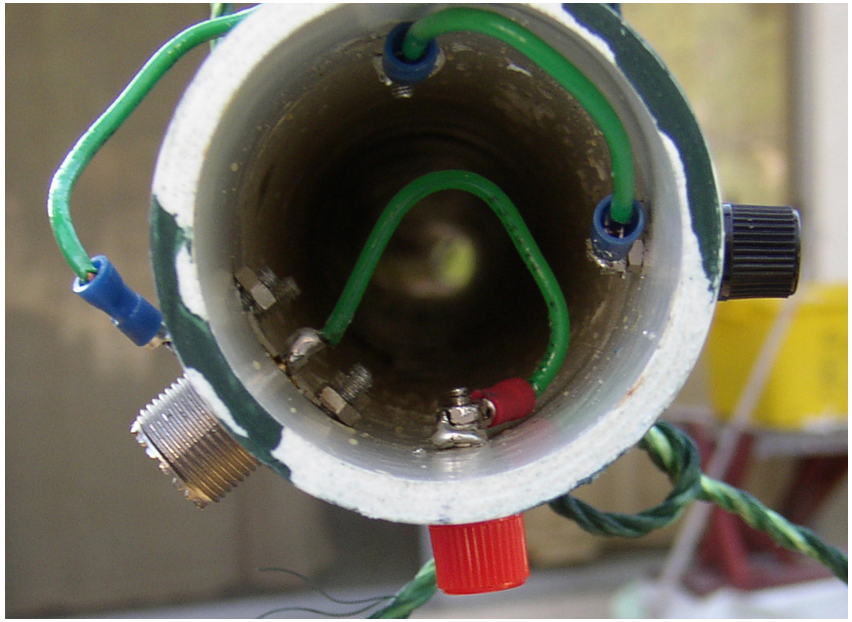
Step 3: Wiring Coax Connector To Antenna Post



Red Antenna Wire Post

Step 4: Wiring Coax Connector To Ground Post



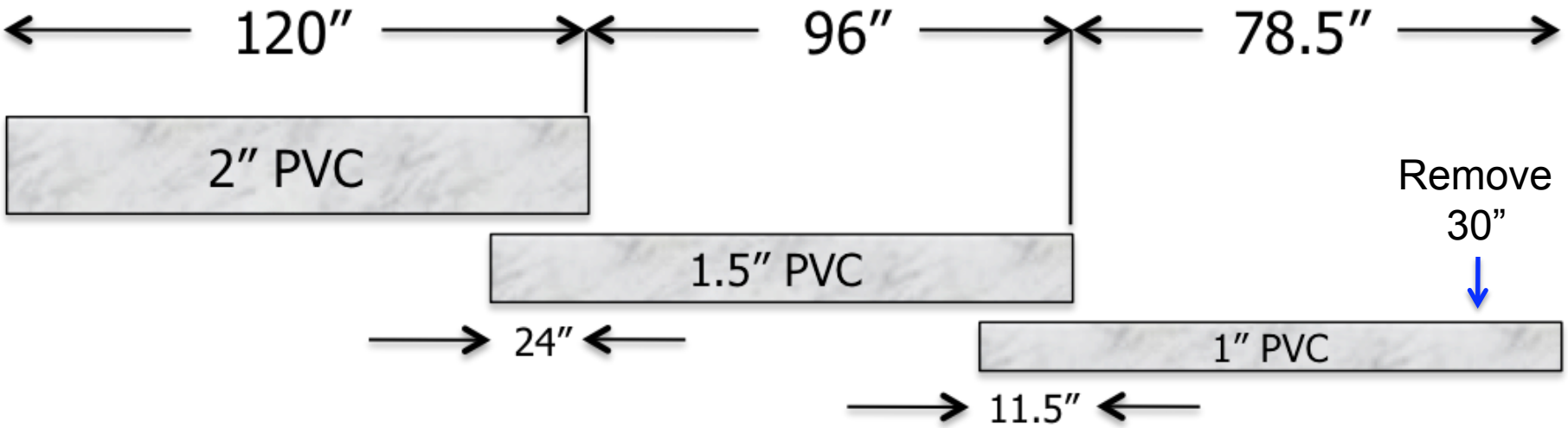


Two Black Ground Posts

Step 5: PVC Mast Preparation & Assembly

2”, 1.5”, 1” PVC Pipes, each 10 ft.

Step 5: PVC Mast Preparation & Assembly



294.5 inches

Telescoped Length = 24.5 FT

Step 5: PVC Mast Preparation & Assembly

Gorilla Tape – 2 Layers of Adhesive and 2 Layers of Fabric Backing

Step 5: PVC Mast Assembly

Bottom Antenna Binding Post

Top Antenna Binding Post

Step 6: Wiring The Mast

- Wire Wisdom: No Hard Rule
- Several Factors: wire size, diameter of turns & dielectric properties of form material
- "Experience: 1/2 λ wire wound on insulating form with linear pitch yields resonant 1/4 λ"

ARRL Antenna Book, D. Straw, N6BV Editor, 21st Edition, p. 6-38

Step 6: Wiring The Mast

- For a HWV, need ½ λ of physical wire to = ¼ λ electrically
- L (½ λ) = 468/1.825 MHz = 256.5 ft

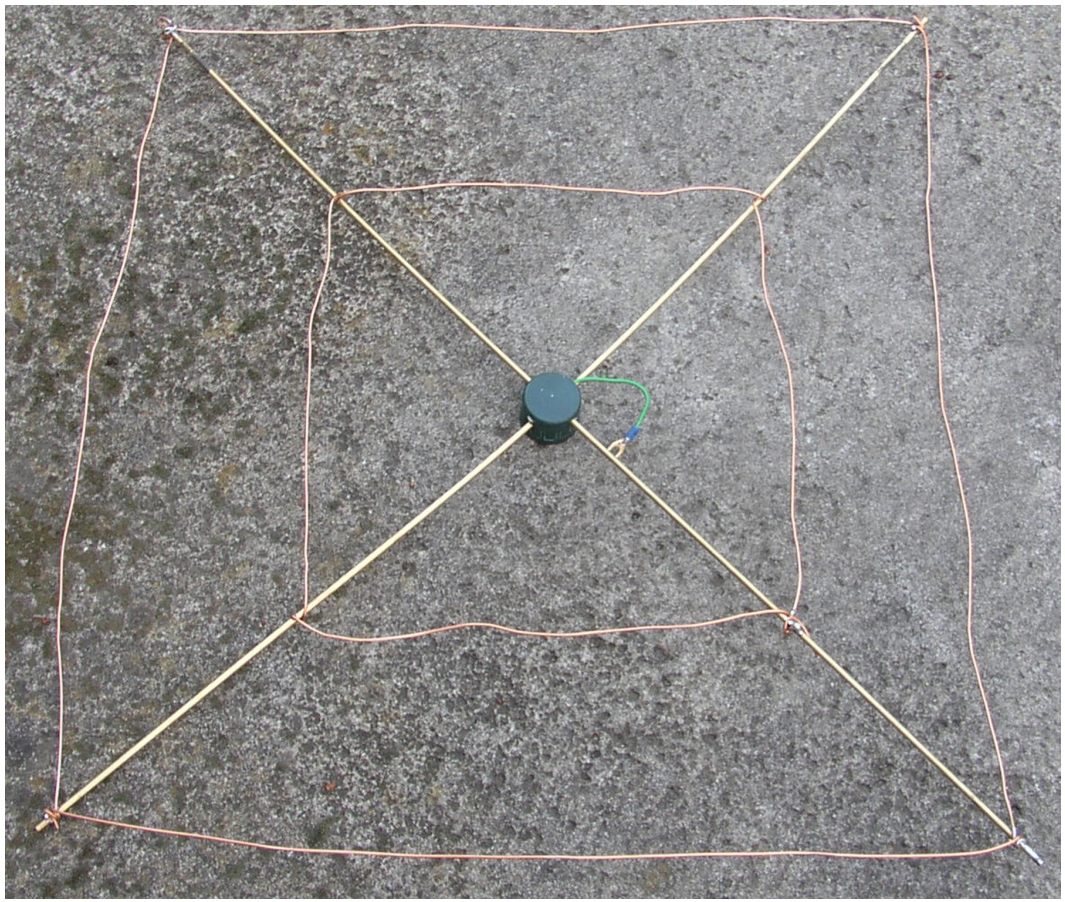
Hi Tech Wire Holder

Step 6: Wiring The Mast

Pitch = approximately ½"

Step 6: Wiring The Mast

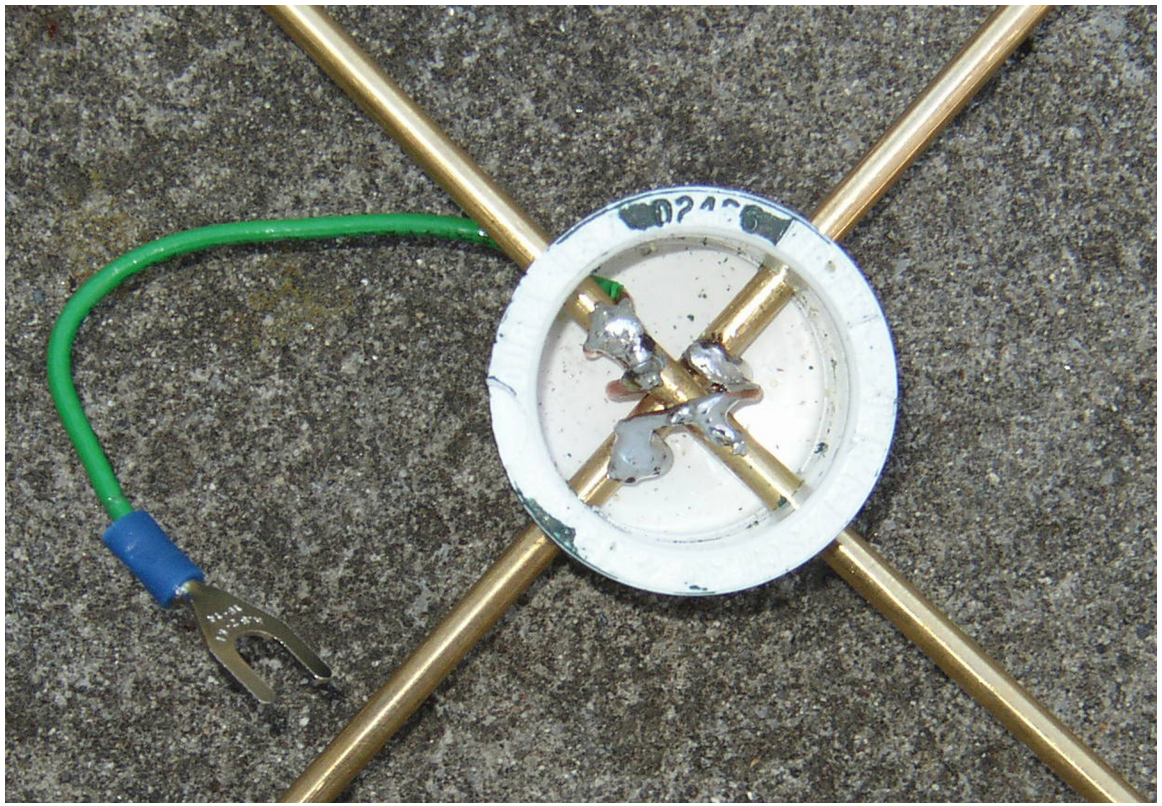
Step 7: Capacitance Hat



2 x 3 ft. Brass Rods + Copper Wire

Credit: John, N7ON, Personal Communication

Step 7: Capacitance Hat



View Inside 1" Top Cap

Step 8: Bottom Cap Support

Step 9: Final Assembly

10 Radials

(14 Gauge Stranded)

24.5 Feet of Highly Educated PVC Tubing !

SWR, Bandwidth, Power

60 KC Bandwidth

Easily Handles 600-700 Watts

Frequency	SWR
1.800	1.6:1
1.810	1.5:1
1.820	1.3:1
1.830	1.2:1
1.840	1.3:1
1.850	1.5:1
1.860	1.8:1
1.870	<2:1*
1.880	<2:1*
1.890	<2:1*
1.900	<2:1*
1.910	<2:1*
1.920	<2:1*
1.930	<2:1*
1.940	<2:1*
1.950	<2:1*
1.960	<2:1*
1.970	<2:1*
1.980	<2:1*
1.990	<2:1*
2.000	<2:1*

*With Antenna Tuner

<2:1

Antenna Tuner

Propagation

- **Best**
  - United States
  - Far East
  - *South Pacific*
  - *Eastern Russia*
  - *Caribbean*
  - *Central/South America*
- ***Challenge***
  - *Europe*
  - *Central Asia*
  - *Middle East*

160M QSOs
Worked/Confirmed

Worked All States
Worked: 50
Confirmed: 45

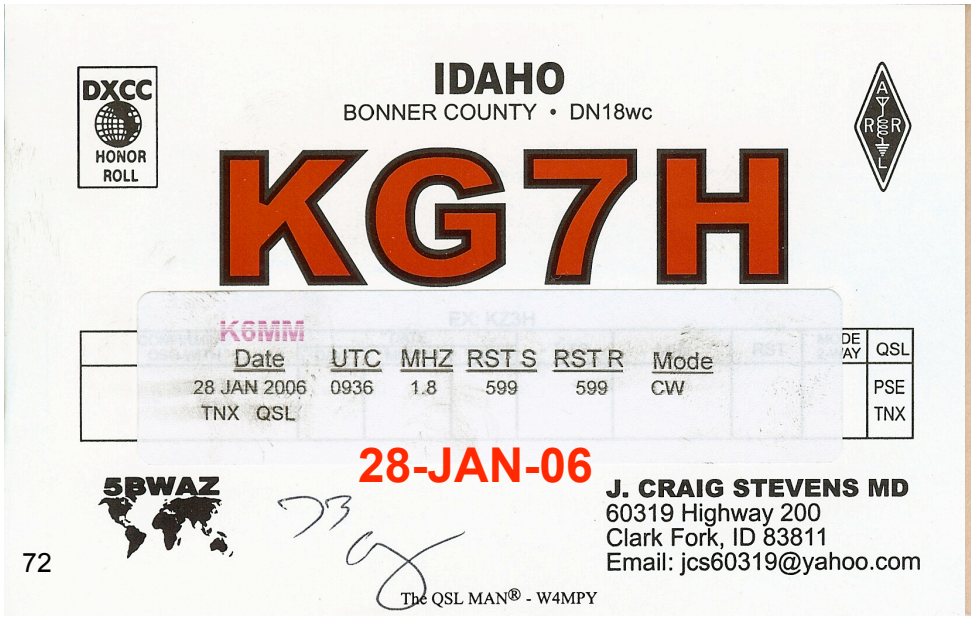
160M Operators Are Good "QSLers"

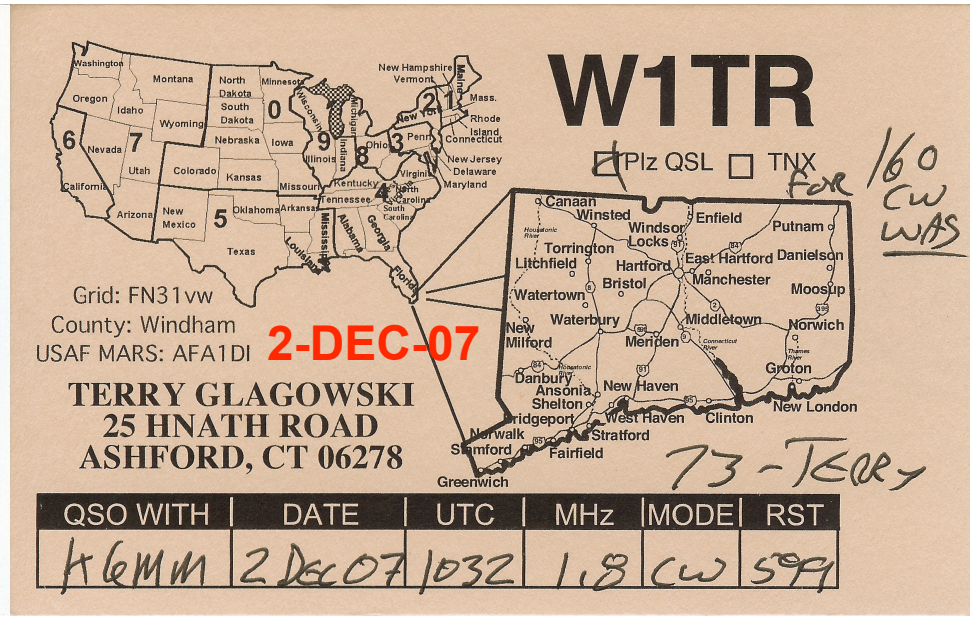
Entity	160M
Alabama	K4TD
Alaska	KL7RA
Arizona	KC7V
Arkansas	W5ZN
California	N6ND
Colorado	W0GG
Connecticut	W1TR
Delaware	
Florida	N4TB
Georgia	K4PI
Hawaii	KH6/K9FD
Idaho	K0TO
Illinois	K9DX
Indiana	KE9I
Iowa	N0NI
Kansas	W0BH
Kentucky	K4FT
Louisiana	N5AN
Maine	N1BUG
Maryland	KD4D
Massachusetts	K1TTT
Michigan	W8MJ
Minnesota	N0FP
Mississippi	N4OGW
Missouri	KU1CW

ARRL LoTW

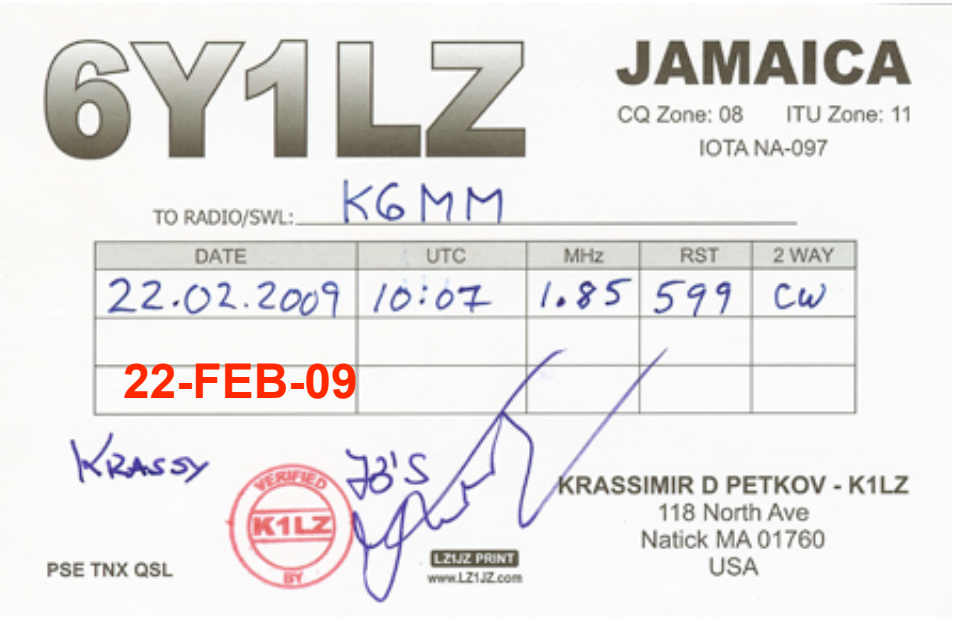
Montana	K7BG
Nebraska	K0HA
Nevada	N7ON
New Hampshire	
New Jersey	N2ED
New Mexico	N2IC
New York	N1EU
North Carolina	K4SV
North Dakota	NT0V
Ohio	AD8P
Oklahoma	K5TT
Oregon	K7RAT
Pennsylvania	K3WW
Rhode Island	
South Carolina	AA4V
South Dakota	KD0S
Tennessee	W4NZ
Texas	K5NA
Utah	W7CT
Vermont	
Virginia	W4MYA
Washington	K7OX
West Virginia	
Wisconsin	W0AIH
Wyoming	KO7X

160M DXCC: W = 30; C = 20






6Y1LZ


6Y1LZ
JAMAICA
CQ Zone: 08 ITU Zone: 11
IOTA NA-097
TO RADIO/SWL: K6MM
DATE UTC MHz RST 2 WAY
22.02.2009 10:07 1.85 599 CW
22-FEB-09
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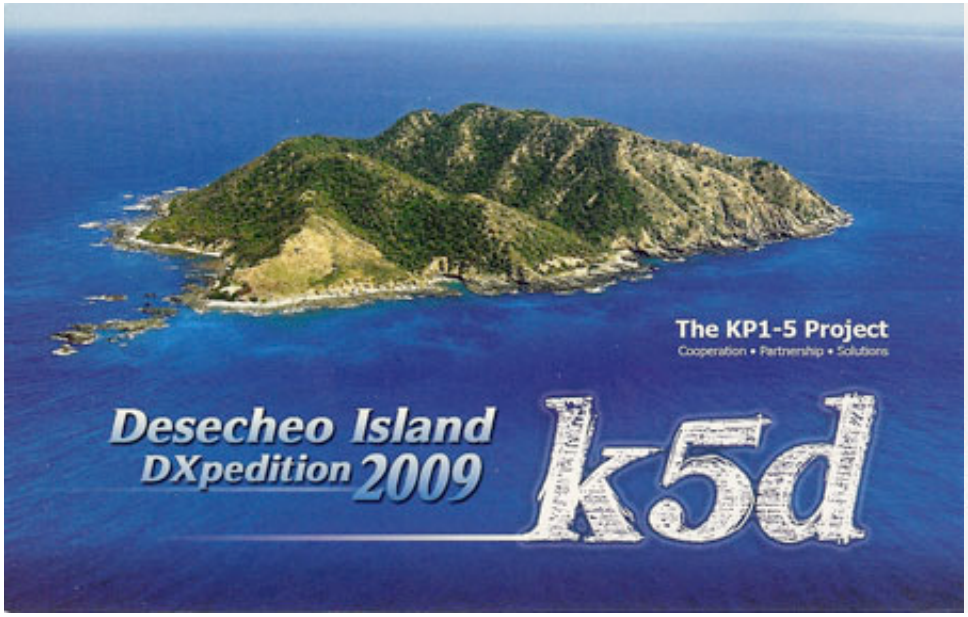
USA
PSE TNX QSL


The KP1-5 Project
Cooperation • Partnership • Solutions
Desecheo Island
DXpedition 2009
k5d


The Desecheo DXpedition Japan Foundation
Northern California DX Foundation, Inc.
International DX Association
Lone Star DX Association
GDXF
TCDXA
Minnesota
DXVF
SDXF
SOUTHEASTERN DX
CDXC
AFRICAN DX SAFARIS
ICOM
spiderbeam
microHAM DX Store
dx-hamspirit.com
SteppIR
K5D confirms QSO(s) with:
K6MM
Date UTC Band RST 2X
13-Feb-2009 21:09 17m 59 SSB
14-Feb-2009 05:50 30m 599 CW
14-Feb-2009 09:44 80m 59 SSB
14-Feb-2009 10:52 40m 59 SSB
14-Feb-2009 16:54 15m 599 CW
14-Feb-2009 23:01 17m 599 CW
15-Feb-2009 09:45 160m 599 CW
TNX QSL! de K5D (via N2OO)
N2OO QSL SJDXA
QSL Manager: Bob Schenck, N2OO • QSL printed by WZ8P
QSL designed by SQ8X.net
QSL SUPPORT:
15-FEB-09

03-NOV-06

XF4DL - Revillagigedo - Socorro Island, IOTA NA-030

The dxpedition to Revillagigedo was dependent on the support and help of many individuals and Mexican authorities, in particular the Captain and Crew of ARM Vallarta, the Mexican Navy Personnel on Socorro Island, management and staff of VOGT electronic de Mexico and many others. Without their warm and extraordinary help the dxpedition would not have been possible. Our very special thanks go to

COFETEL:
Lic. Ariel Ricárdez Galindo, Director General
Ing. Moisés Ramírez Rodríguez
Samuel Guzmán Valaguez

SECRETARIA DE MARINA:
Almirante Marco Antonio Peyrot González
Vicealmirante C.G. DEM. Alberto Castro Rosas
Capitán de Navío C.G. DEM. José Manuel Rodríguez Morales,
Contralmirante C.G. DEM. Romeo Jiménez Trejo
Capitán de Fragata C.G. DEM. Hilario Durán Tiburcio
Teniente de Navío C.G. DEM. Jaime Jiménez Matamoros
Capitán de Fragata C.G. DEM. Ignacio López Bernardino
Segundo Maestre C.G. IMP. Joel García Moreno

SEMARNAT:
Ernesto Enkerlin Hoeflich
Carlos Castillo Sánchez
María Alejandra Ochoa López

SECRETARIA DE GOBERNACIÓN (INTERIOR):
Lic. Jorge Toro Benito

VOGT electronic de México:
Lic. Marianne Kentzler

VOGT electronic AG Germany:
Simone Schroeder

XF4DL confirms the following QSO(s): **K6MM**

Date	UTC	Band	2way	RST
2006-11-03	06:39	160m	CW	599

XF4DL confirms the following QSO(s): **K6MM**

Date	UTC	Band	2way	RST
2006-10-22	05:27	80m	CW	599
2006-10-28	01:13	15m	SSB	59
2006-10-28	09:07	80m	SSB	59
2006-10-29	02:25	20m	SSB	59
2006-10-31	08:38	80m	CW	599
2006-10-31	22:00	12m	SSB	59

Individual contribution

W5BXX David	DL7VYL Gerda	VE3LYC Cezar-Ioan
AE6RR Craig	DL9NDS Uwe	W7AV Dennis
DF8XC Burkhard	F6CTE Patrick	XE1GSQ Ariel
DK3HA Klaus	HB9HFN Cedric	XE1KK Ramón
DL4FCS Wolfgang	JA3AAW Takeshi	XE1NK Alberto
DL4KQ Frank	N6AWD Fred	XE1NW Guillermo
DL6KAC Christian	N6VR Raymond	XE2WWW Jorge

REVILLAGIGEDO DXPEDITION
XF4DL
www.xf4dl.xedx.org

TNX QSO and QSL best 73 de XF4DL-Team

QSL via N6AWD or DL9NDS

09-MAR-08

TX5C
Clipperton Island Dxpedition
Feb - Mar 2008

To Radio: **K6MM**

TX5C confirms the following QSO(s):

2008-03-09	04:11	30m	CW	599	
2008-03-09	04:32	80m	CW	599	
2008-03-09	07:23	160m	CW	599	
2008-03-09	09:44	80m	SSB	59	
2008-03-09	10:08	40m	SSB	59	
2008-03-09	13:46	40m	CW	599	
2008-03-09	19:22	15m	CW	599	
2008-03-09	20:51	15m	SSB	59	Thx

Verified N7CQQ

ICOM
Stepp R

Grid DK50JH • IOTA NA-011 • Lon / Lat N 10° 18.9' W 109° 13'

Clipperton Island is a coral atoll in the Eastern Pacific Ocean. The island is 12 km in circumference and its acidic lagoon is devoid of fish. It has no permanent inhabitants other than the multitude of small orange land crabs and a variety of sea-going birds. Average temperatures are 20–32 °C (68–90 °F) and the rainy season occurs May–October. Clipperton's name comes from John Clipperton, an English pirate and privateer of the early 1700s who was the first one to describe and map the island. Control of the island has been administered by the French colonial high commissioner for French Polynesia since 1935.

LZ1MZ PRINT
www.LZ1JZ.com

NCCC

PVRC
A Contesting Club Est. 1984

09-APR-07

N8S

SWAINS ISLAND DXPEDITION

4-17. April 2007.

IOTA: OC-200 (11°05'S 171°05'W)
Zone: CQ-32 ITU-62 WW Grid: AH48kw

To Radio: **K6MM**

N8S confirms the following QSO(s):

Date	Time	Band	Mode	RST
09-04-2007	07:40	160m	CW	599
11-04-2007	01:37	10m	CW	599
11-04-2007	02:53	17m	CW	599
11-04-2007	03:27	12m	SSB	59

TNX for the QSO's 73's Hrane, YT1AD

To Radio: **K6MM**

N8S confirms the following QSO(s):

Date	Time	Band	Mode	RST
11-04-2007	22:34	12m	RTTY	599
12-04-2007	04:13	20m	SSB	59
13-04-2007	06:10	30m	CW	599
13-04-2007	06:22	40m	SSB	59

TNX for the QSO's 73's Hrane, YT1AD

VERIFIED BY YT1WW

Grateful Thanks to:

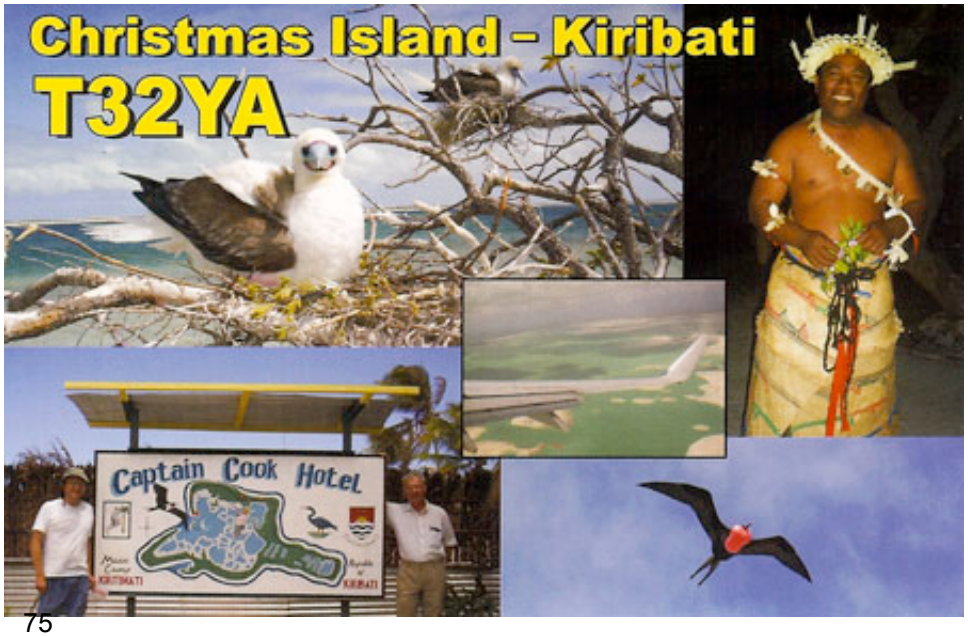
KØGEO

LZ1JZ QSL PRINT http://www.LZ1JZ.com

QSL created YU1DX

QSL via:
Prof. dr Hrane Milošević
36206 Vitanovac, Serbia

QSO verified by



20-FEB-08

February 2008 DXpedition of Bob W7YAQ and Bill N7OU
Christmas Island (Kiritimati), East Kiribati, OC-024
Latitude 2.01 North, Longitude 157.40 West

T32YA cfms 2X QSOs with K6MM

Date	Time	Freq	Mode	RST
13-Feb-08	1021Z	7.007	CW	599
20-Feb-08	1307Z	1.815	CW	599
23-Feb-08	2122Z	18.103	RTTY	599
24-Feb-08	2356Z	18.125	SSB	59

TNX JOHN! 73 Bob

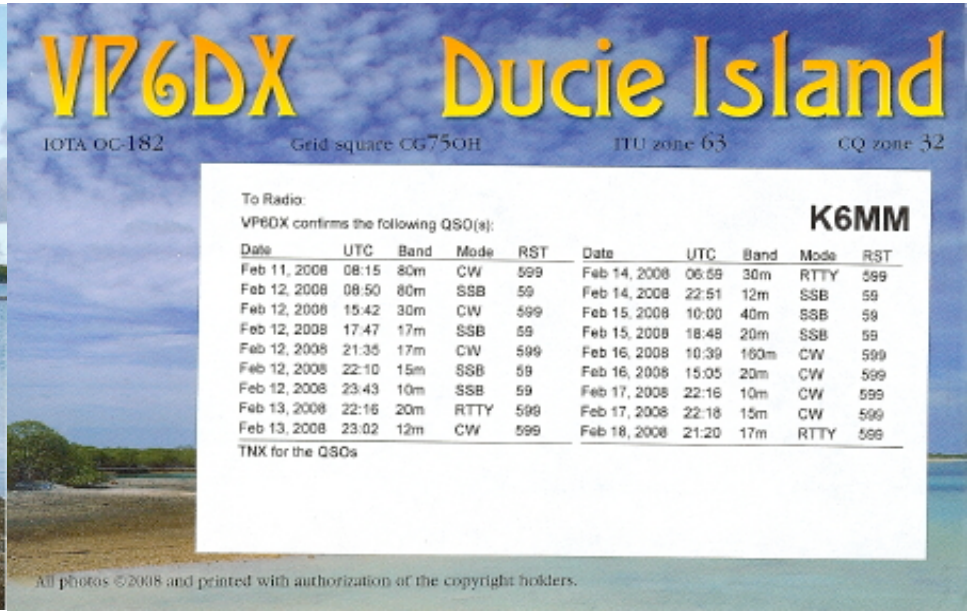
We traveled via Honolulu due south 4000 km on the weekly Air Pacific flight to Christmas Island. We stayed at the ham-friendly Captain Cook Hotel, and had a thatched-roof bungalow conveniently located 40 meters from the water on the north side of the island. As T32YA (Bob) and T32OU (Bill) we made 15,500 QSOs in 13 days on the air, including 3,000 in the ARRL DX CW contest, all with 100 watts and vertical antennas. Christmas Island is a famous destination for fishermen seeking the Pacific bonefish. Over meals we shared our fishing (the airwaves) adventures with the fishing stories of the other guests. It was a great trip!!

LZ1JZ PRINT www.LZ1JZ.com

Thanks for the QSOs

73 Bob T32YA / W7YAQ


VP6DX
Ducie Island
Dietmar
Nigel
Cliff
Nick
Les
Neil
Ben
André
Robert
Matt
Brough
Andy
Harry
Theresa
Carsten
Milt
Eric
Robin
Tõnno
a project of Radio Expeditions LLC


VP6DX
Ducie Island
IOTA OC-182
Grid square CG75OH
ITU zone 63
CQ zone 32
To Radio:
VP6DX confirms the following QSO(s):
K6MM
Date UTC Band Mode RST Date UTC Band Mode RST
Feb 11, 2008 08:15 80m CW 599 Feb 14, 2008 06:59 30m RTTY 599
Feb 12, 2008 08:50 80m SSB 59 Feb 14, 2008 22:51 12m SSB 59
Feb 12, 2008 15:42 30m CW 599 Feb 15, 2008 10:00 40m SSB 59
Feb 12, 2008 17:47 17m SSB 59 Feb 15, 2008 18:48 20m SSB 59
Feb 12, 2008 21:35 17m CW 599 Feb 16, 2008 10:39 160m CW 599
Feb 12, 2008 22:10 15m SSB 59 Feb 16, 2008 15:05 20m CW 599
Feb 12, 2008 23:43 10m SSB 59 Feb 17, 2008 22:16 10m CW 599
Feb 13, 2008 22:16 20m RTTY 599 Feb 17, 2008 22:18 15m CW 599
Feb 13, 2008 23:02 12m CW 599 Feb 18, 2008 21:20 17m RTTY 599
TNX for the QSOs
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VP6DX
Ducie Island
IOTA OC-182
Grid square CG75OH
ITU zone 63
CQ zone 32
To Radio:
VP6DX confirms the following QSO(s):
K6MM
Date UTC Band Mode RST Date UTC Band Mode RST
Feb 23, 2008 08:01 160m SSB 59
Feb 24, 2008 10:44 40m CW 599
TNX for the QSOs
All photos ©2008 and printed with authorization of the copyright holders.

23-FEB-08 – SSB !!

ARRL 160M Contest
1st Weekend in December

My First Top Band Contest Award ☺

June 2009 QST Article

- Share the design
- Help others get on 160M
- Generate additional ideas for improvement
- Fun Summer Project
- Submitted December 2008
- Accepted February 2009
- Published June 2009

Feedback From QST Readers

"Dear Sir: Finished reading and downloading your article on the 160 meter vertical antenna in the latest issue of QST. Very satisfying detail is provided for me, close to prompting me to move my posterior and build this sucker!"
73, all the best, Milt W6RJO (original call, 87 yrs.)

"I've dinked around with that idea forever, but got detoured via the usual work/family/inertia (in no particular order) routine. You may have pushed me over the edge!" *Bob Coomler, W6RJC*

Feedback From QST Readers

"I am really excited about building this and have made my parts list, gone through my scrap box and am going to start on it tomorrow. I am going to attempt to build this using CAT 5 computer cabling (8 conductor, 4 pair) since I am a computer geek and have lots of this laying around. I will let you know how it turns out."
73, Eric Boyle N0YET

"Enjoyed your article and when I get back to our TX winter hideout, I think I'll try it. Thanks." *Kim, W9CMG*

Feedback From QST Readers

"Thank you for taking the time to publish an article on your antenna design. It fits right into what I'd like to do in the corner of my yard in a community that frowns on any antennas." *Bela Wouters, AF6OJ*

"I intend to build a vertical antenna just like you did. I'm thinking about making it taller but I'm not sure how the PVC tubing will behave, any comments will be very much appreciated! Regards and 73." *JK DeMarco, PY2WM*

Feedback From QST Readers

"I read your article about the Top band with great interest. I am an old ham and spent a lot of inactive years, but you have me interested in building the antenna as described. I have never operated 160 and only have low power such as TS830. I would appreciate any additional comments you might have since you have me fired up to get back on the air. Thanks and 73". *Tom, K4RCW*

"Might be better to paint the PVC after doing all the work. I am covered with GREEN PAINT. ☺" *Bill, K4NSG*

160M Installations

Based On QST Article

W2TRR, Tom Ray

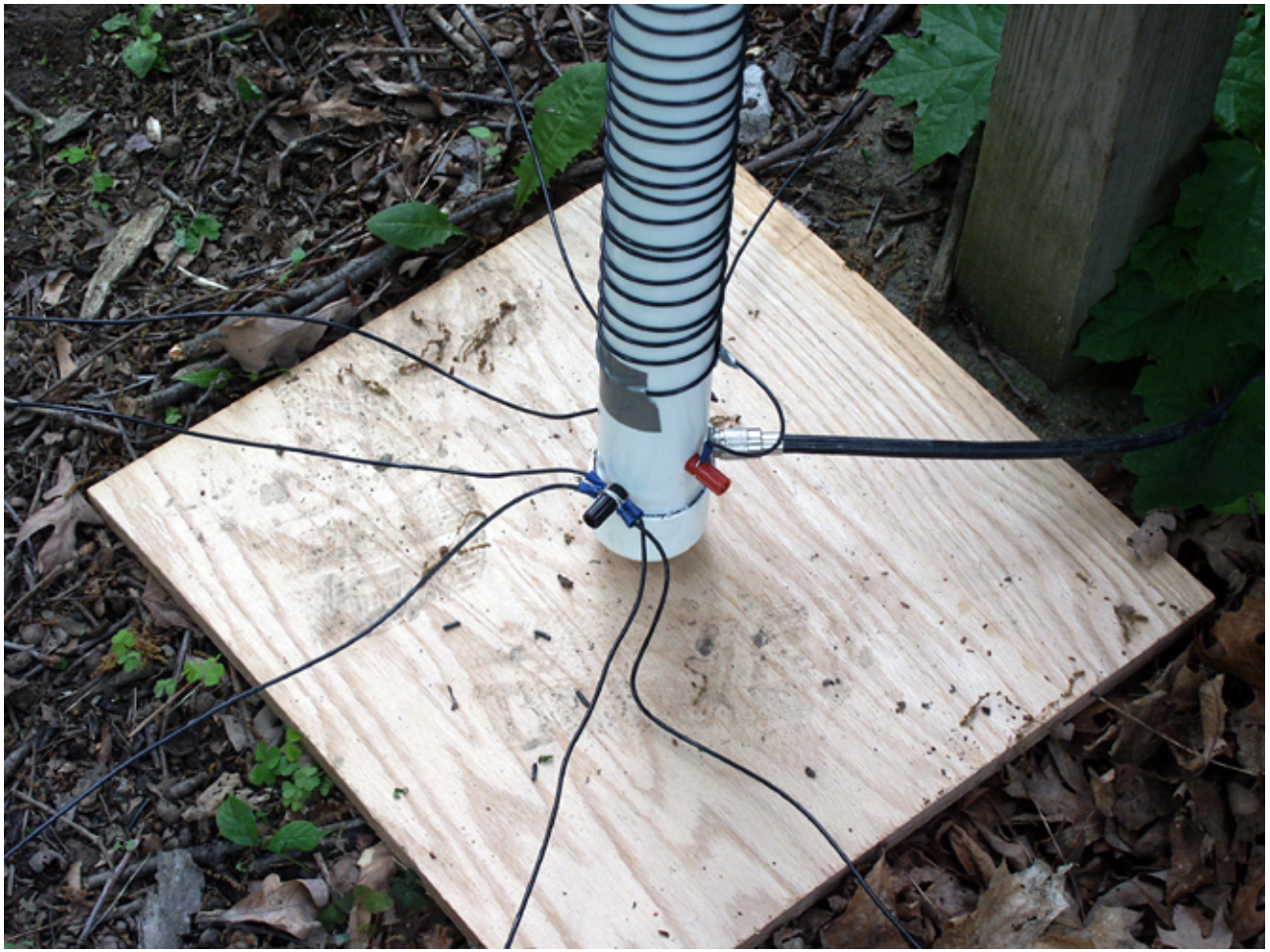
New Windsor, NY

VP/Corp. Dir. Of Engineering, Buckley Radio, WOR News Talk 710, NYC

W2TRR, Tom Ray

New Windsor, NY

VP/Corp. Dir. Of Engineering, Buckley Radio, WOR News Talk 710, NYC



W2TRR, Tom Ray

New Windsor, NY

VP/Corp. Dir. Of Engineering, Buckley Radio, WOR News Talk 710, NYC

W2TRR, Tom Ray

New Windsor, NY

VP/Corp. Dir. Of Engineering, Buckley Radio, WOR News Talk 710, NYC

W2TRR, Tom Ray

New Windsor, NY

VP/Corp. Dir. Of Engineering, Buckley Radio, WOR News Talk 710, NYC

"Received QST on Friday, and saw your article on the helical 160M vertical – something I've thought would work for a while, but haven't had the time to try. So I built the antenna on Saturday. Don't have much room for really long radials, but did what I could. I have an elderly friend in Connecticut that likes to hang on 160. I contacted my friend last night, and with no radials in his direction had an S8 on the Vertical with 100 watts, so it's working very well!"

KB1NHV, Arthur Rank

Graniteville, VT

KB1NHV, Arthur Rank

Graniteville, VT

KB1NHV, Arthur Rank

Graniteville, VT

KB1NHV, Arthur Rank

Graniteville, VT

KB1NHV, Arthur Rank

Graniteville, VT

KB1NHV, Arthur Rank

Graniteville, VT

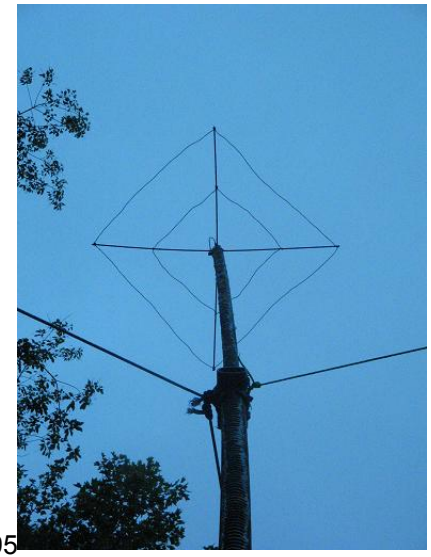
"I am thrilled! Made (7) 160M contacts this week. One in NH, (2) NY, (2) CT and (2) in Canada. Band had some activity about 10:00 PM. I am quite pleased for the first try! 73, Art"

W3ATM, Bill Bequette

Fairfield, PA








W3ATM, Bill Bequette

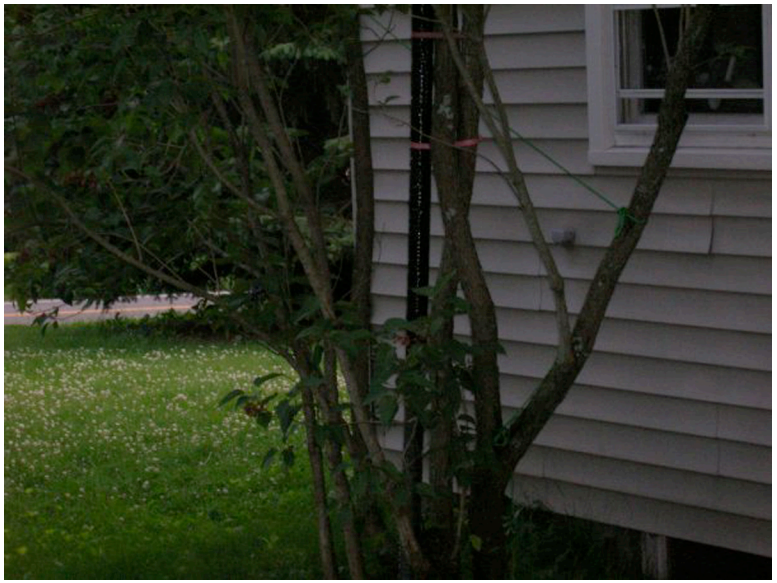
Fairfield, PA




"I talked last night with 8 people within 400 miles in the MD, Rhode Island, NY area with 100 watts. I had to cut slightly more than three feet of wire off the base to get it resonating at about 1.840 Mhz. But with a tuner as you mentioned I definitely can cover 1.8 to 1.9 Mhz. I painted it a dark green so it blends into the edge of the forest in my backyard."

W3TUA, Korey Chandler

Dryden, NY



"Your instructions were excellent and easy to duplicate. I did make a few modifications to suit the materials I had on hand but the antenna performs quite well. The support fits right against an auxiliary chimney on one end of the house. The best part is it requires no trees! Again, thank you for the inspiration and motivation to 'have no more excuses' to get back on 160!" 73, Korey

W2JLK, Jim Knight

Matawan, NJ

"Ended up with almost exactly the performance you described. After pruning the wire at the bottom, I measured 1:1.2 SWR at 1.836 with a 1:2 SWR bandwidth from 1.804 to 1.869. For these tests I used 5 radials lying on top of the ground. Anyway, thanks for an interesting project and info/advice. Our Field Day team of former Bell Labbers will be trying the antenna to give us access to another band."

K6IP, Armand Sun

Fremont, CA

Dual-Feed System
- **SO-239 Coax**
- **450 Ohm Twin-Lead**

6Y5WJ, Josh Walker

St. Elizabeth, Jamaica

"I wound the 256 feet of single enameled copper wire at half inch spacing, did all the connections and run a single 1/4 wave ground wire to test for resonance. It resonates great....but at 73Mhz..!!! At the required frequency (1.825) the SWR is well over 3:1 and will not come down, even if I add or subtract windings at the bottom. Perhaps it would have been better to use the bamboo for a raft. ☺" *Josh*

QST Article:
Personally Gratifying + Nice Surprise!

Amateur Radio News and Features

Current News

RSS What's This?

John Miller, K6MM, Wins June *QST* Cover Plaque Award (Jul 1, 2009) -- The winner of the *QST* Cover Plaque Award for July is John Miller, K6MM, for his article "A No Excuses 160 Meter Vertical Antenna." *Congratulations, John!* The winner of the *QST* Cover Plaque award -- given to the author or authors of the best article in each issue -- is determined by a vote of ARRL members on the *QST* Cover Plaque Poll Web page. Cast a ballot for your favorite article in the July issue by Friday, July 31.

Bob Vallio, W6RGG

John Miller, K6MM

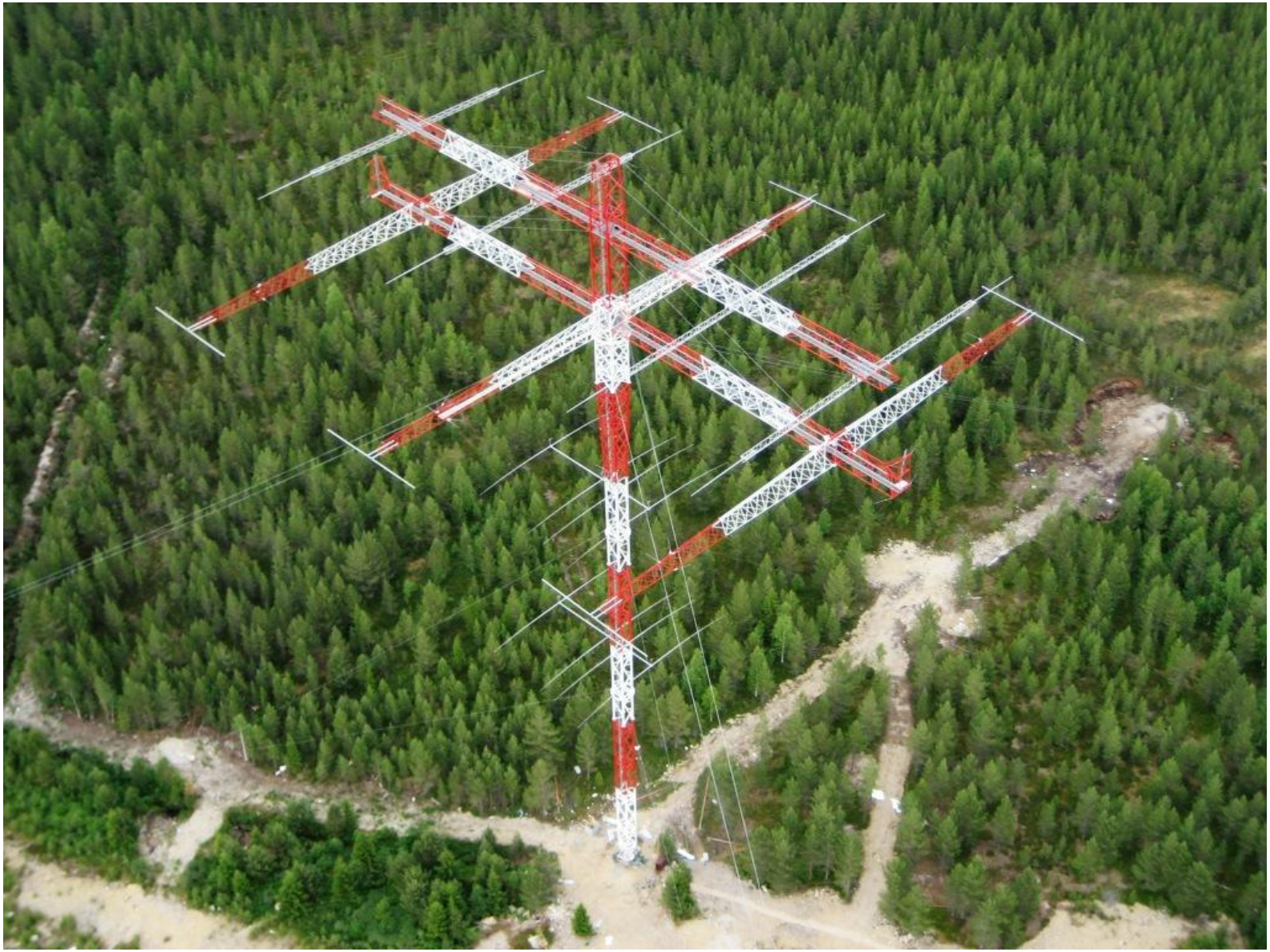
Next Goal:

160M QSO With Contest Superstation

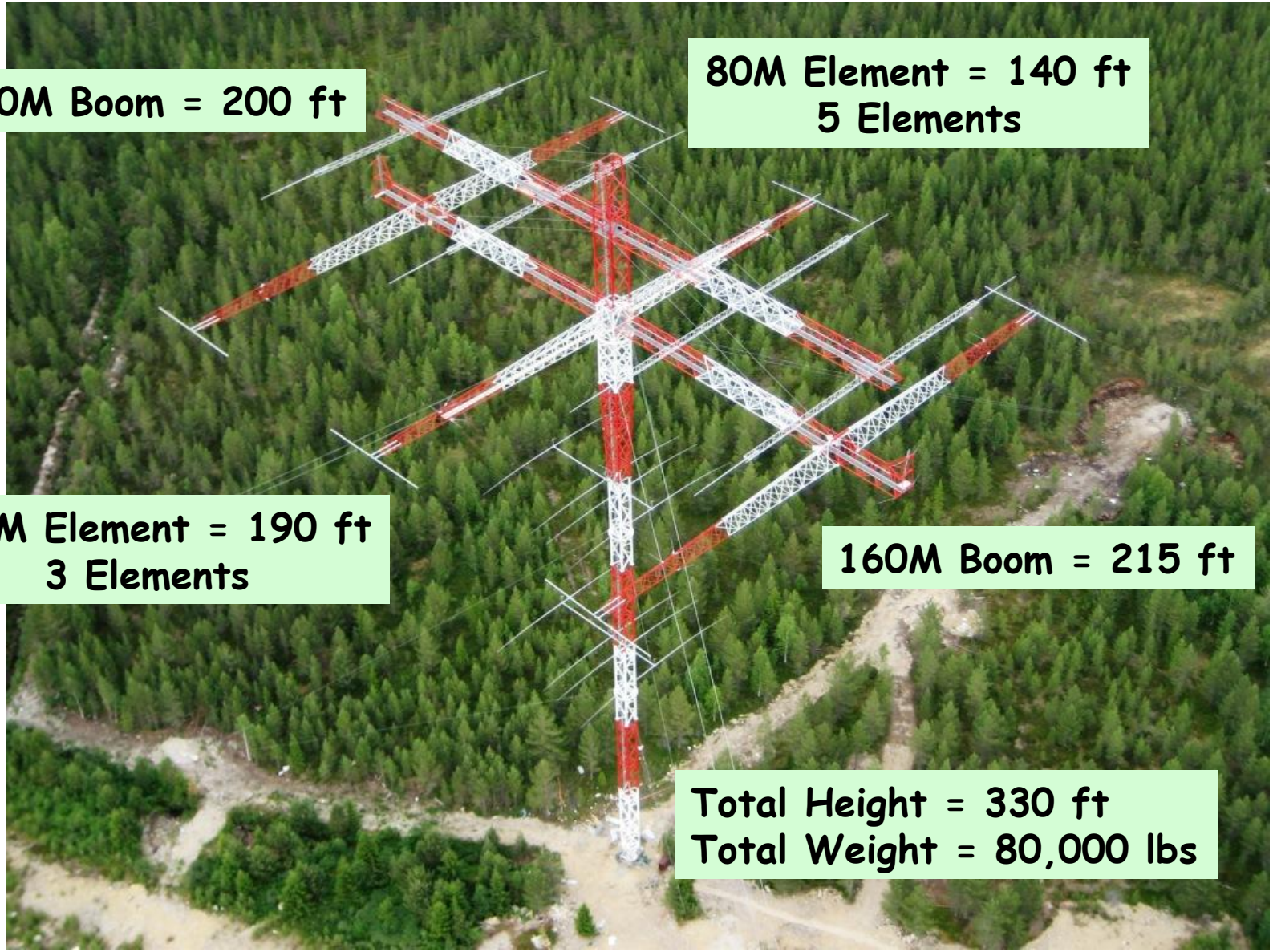
OH8X

Arcala, Finland

OH8X - Monster Beam



OH8X – Monster Beam



OH8X - Monster Beam

OH8X – 160M Triangular Boom

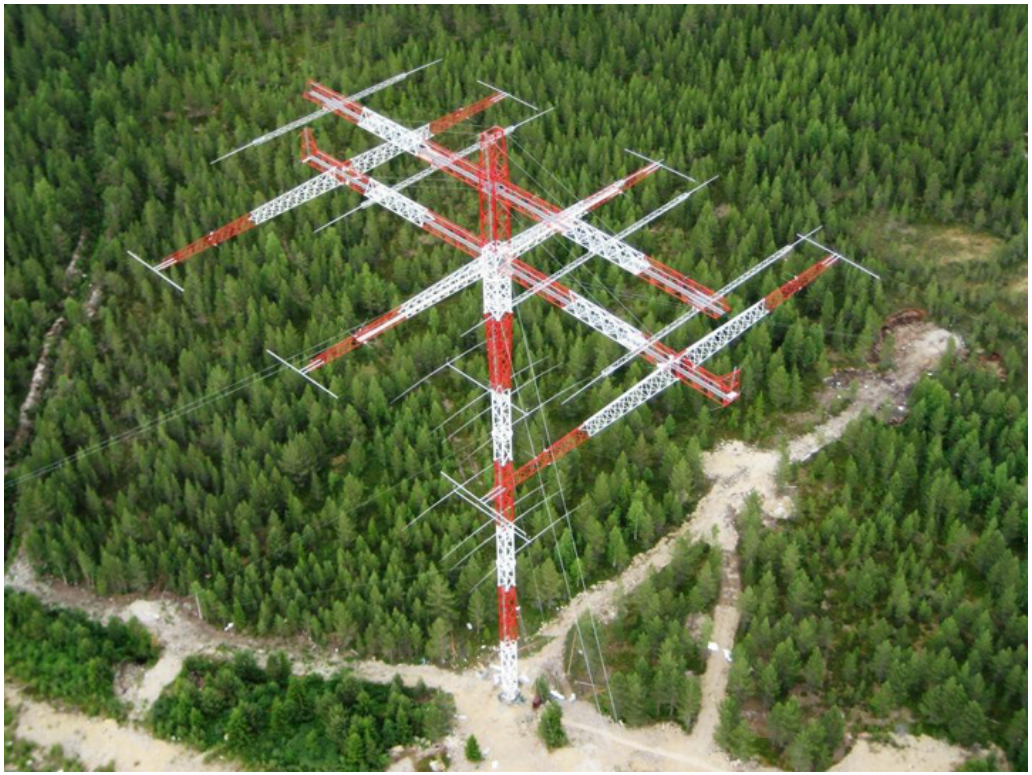
OH8X – Inside The Triangular Boom

The Catwalk

Pekka, OH7RM

Someday: "K6MM 599 de OH8X TU"

David

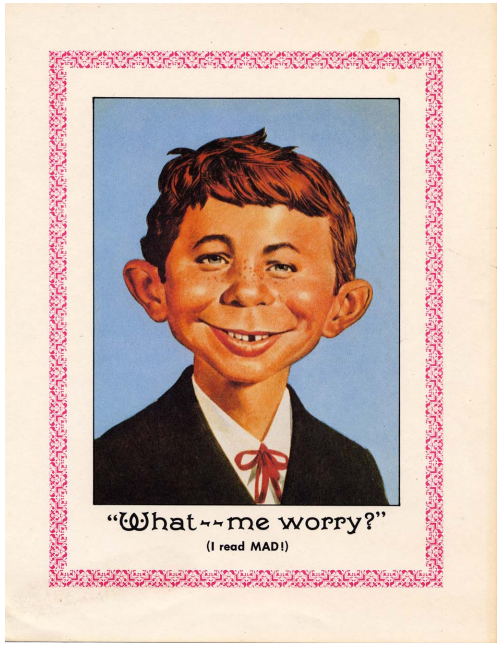


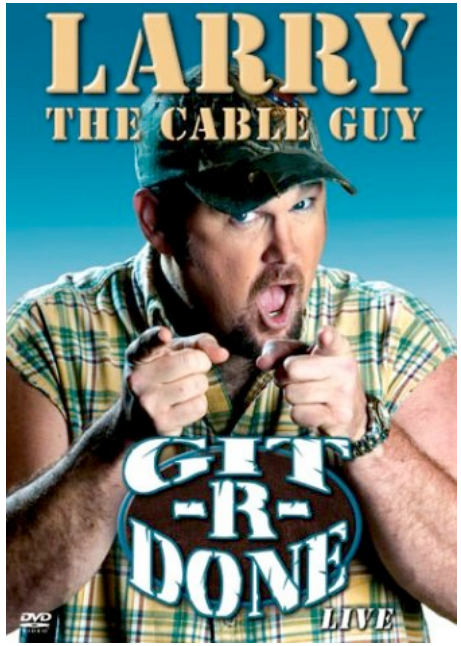
Goliath

Summary

- **True:** A Helically-Wound Vertical is not the perfect 160M antenna
- **Also True:** For a smaller lot size, it's a good alternative to a Dipole or Inverted-L
- Cost-effective
- Easy to build – Some might say Fun
- Generates many memorable QSOs !

My Best Advice?





Thank You !

K6MM @ ARRL.NET