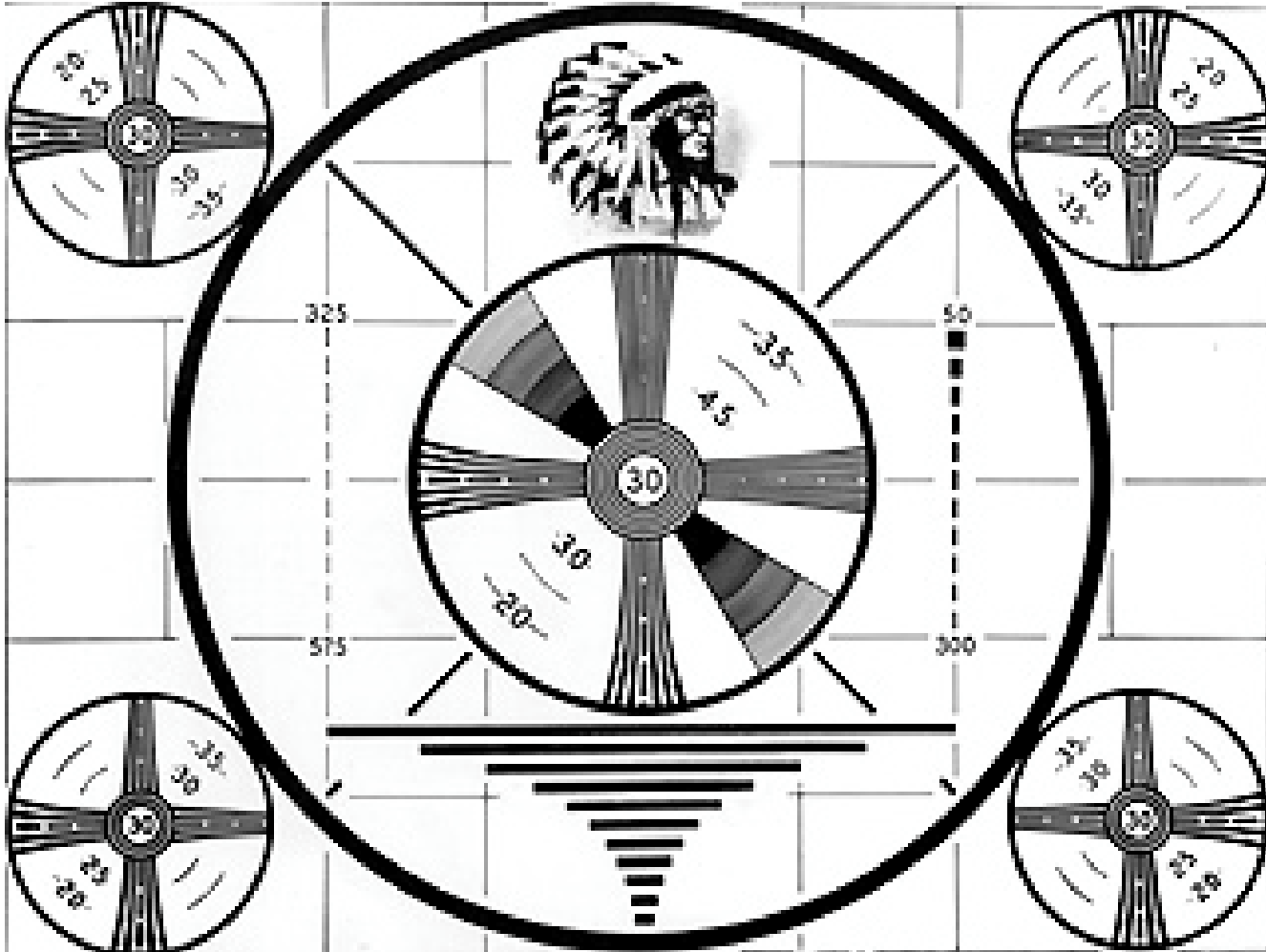


TEST- SETUP

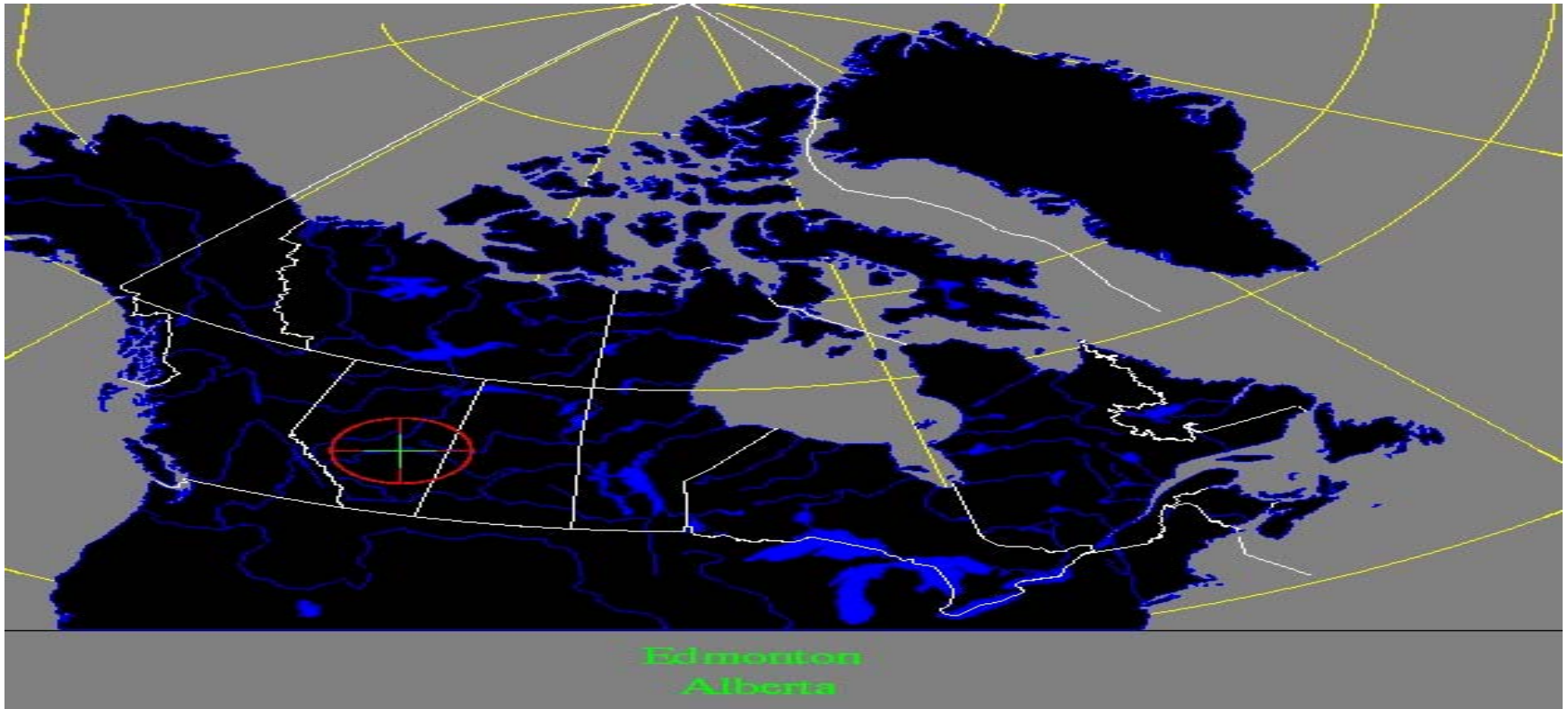
1234567890

1234567890



1234567890

VE6JY



DO33os

NE of Edmonton, Alberta, Canada near Lamont Alberta

<http://www.alfaradio.ca/ve6jy>

The VE6JY Station

Don Moman

- Presented by
- J. T. Mitchell (Mitch) VE6OH
 - AlfaRadio Ltd.
- Please - Questions at **anytime**

Who is VE6JY

- Don Moman VE6JY
 - Owner of the station
 - Long time SWL (active SWL weekends)
 - Licensed in 1985 as VE6BOD
 - Retired Engineer

Overview of what we will cover

- Site and tower layouts
- Tower installs, Guys, anchors
- Antenna manufacturing
- Antenna installs

What we will cover

- Rotator designs (including the failures)
- Rotator control and position reporting
 - Use of Video, etc
- Antenna switching systems
 - Boxes, relays etc

Table of contents continued

- Equipment, filters, amps, radios
 - Tx/Rx filters plus coax stubs k1ttt

Site info

- There are currently 14 or 15 ? towers on this 30 Ha (80 Acres) antenna farm.
- Ranging from 15 Meters (50 feet) to 48.7 Meters (160 feet) high.
- 80 feet (24 M) by 40 (12 M) feet of building.
 - Shop
 - Radio shack (Not the store)

From Google Earth





Grounds

- The surrounding area is rural pasture and farmland.
- The ground drops off gradually several hundred feet, giving a good takeoff into Europe and Africa.

Looking East from the 150 foot 4 element 80 meter beam tower circa 2002



ANTENNAS

- Primary antenna choices include 4 high Yagi stacks on 10 and, 15 meters.
- A 3 high stack on 20 meters + 1 on a separate tower. (4 stack all directions)
- A 5 element 40 meter Yagi, and 3 element 40 meter Yagi both full size.
- 4 element full size 80 meter Yagi.
- All mono band Yagis are home built.

Secondary Antennas

- *Secondary antenna choices include tri-band 10/15/20 beams strategically located to allow in band multiplier hunting.*
- With plans to replace them with monobanders (in process).
 - ~1200 air feet from stacks (1900 by wire)
 - south of stacks
 - Within 10KC of “run station” on a good day.

Why mono banders

- *Mutli band antennas are not good for multiple op stations.*
 - *Mono-banders reduce cross band interference*
 - *Resonant only one band*

4-30 MHz log periodic

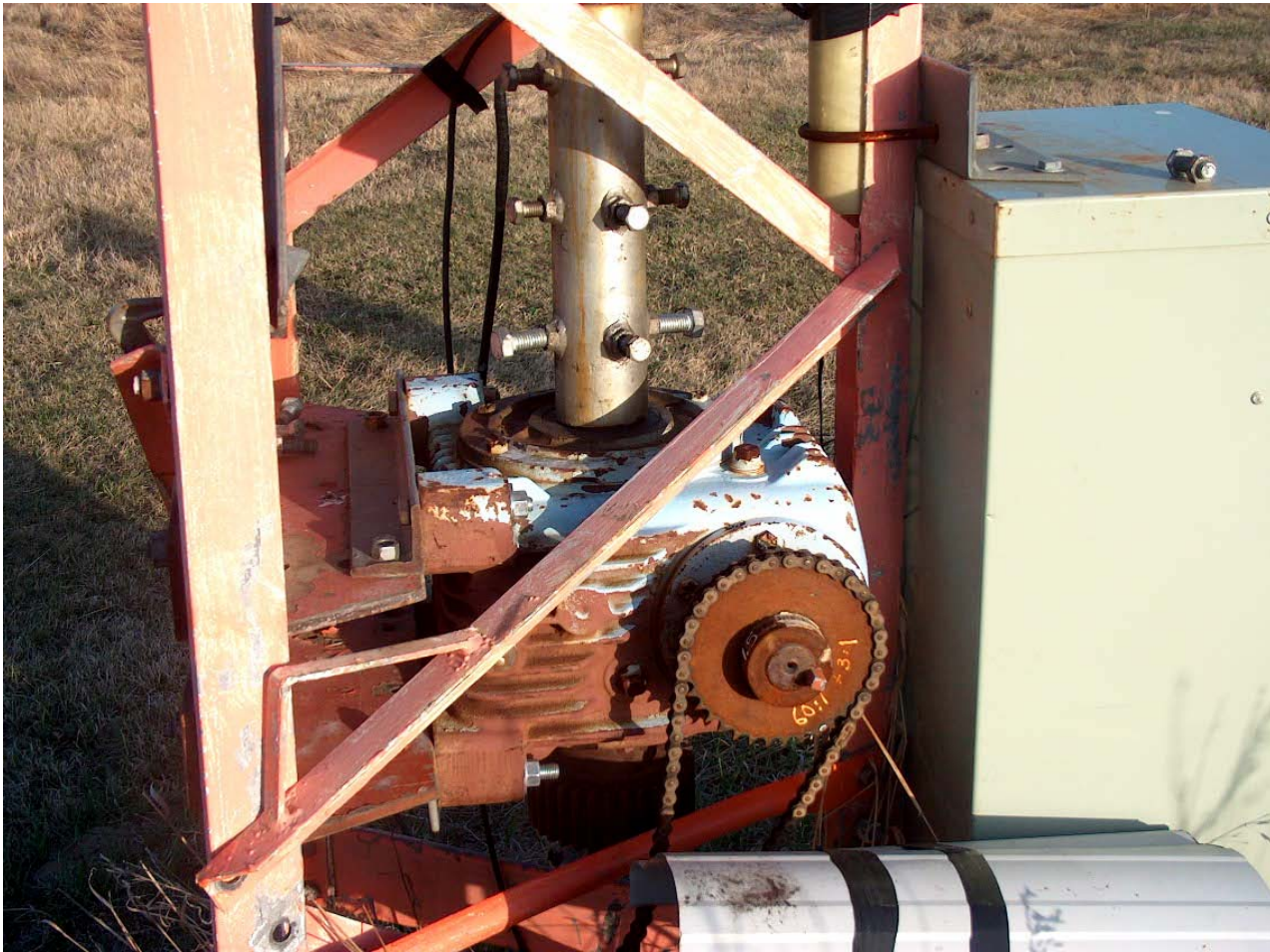


MLP-4 Sabre
9 Db on 4 MHz*
13 Db on 8 Mhz
12 Db F/B,
Boom 62 feet
19 elements
Tower 113 ft
2 foot face

* includes ground gain



Rotator & coupler for Log



Rotator clamp assembly



Clamp mount no drilling on tower



Other Antennas

- Receiving choices include numerous Beverage antenna, with enough choices that both 80 and 160 meters stations can listen in any of the main directions.
- The 4 element 80 Meter beam out performs the Beverages on 80 M.

Future Plans

- 5 Element 80m Non loaded full size elements
 - Cut for the CW part of the band
 - Approx 100ft boom
 - OWA design
 - Boom made from 40 inch on a side tower
 - Limit factor is what the crane can lift – More later on crane.
 - Boom weight is ~ 1900 Lbs
 - Specs on the website
 - www.alfaradio.ca/ve6jy

New 80 Meter CW beam The BOOM 40 inch on side



Big Jin Pole

- Summer of 2000 a forty ton Rough Terrain Crane (P&H Omega RT40) was purchased to assist with tower and antenna installation and repairs.
- With the jib and extensions it is capable of reaching to about 53 meters (173 feet) and lifting 2260 Kg (5000 pounds) at that height.
- Some people get newer cars, Don gets a newer Crane. The price is about the same.

VE6JY / Rover



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Antenna manufacturing

- *One of the few things we are still able to do is build antennas, it is cost effective and easy to do.*
- *Use 0.065 inch wall thickness*
- *Typical element for a 20 Meter antenna only has a few \$ of aluminium. (6 element 20 meter – \$100 Elements, \$100 boom, odds about \$50) ~\$250 - \$300*

Drill the ends



10 Meter Antenna feed point



Typical Truss point

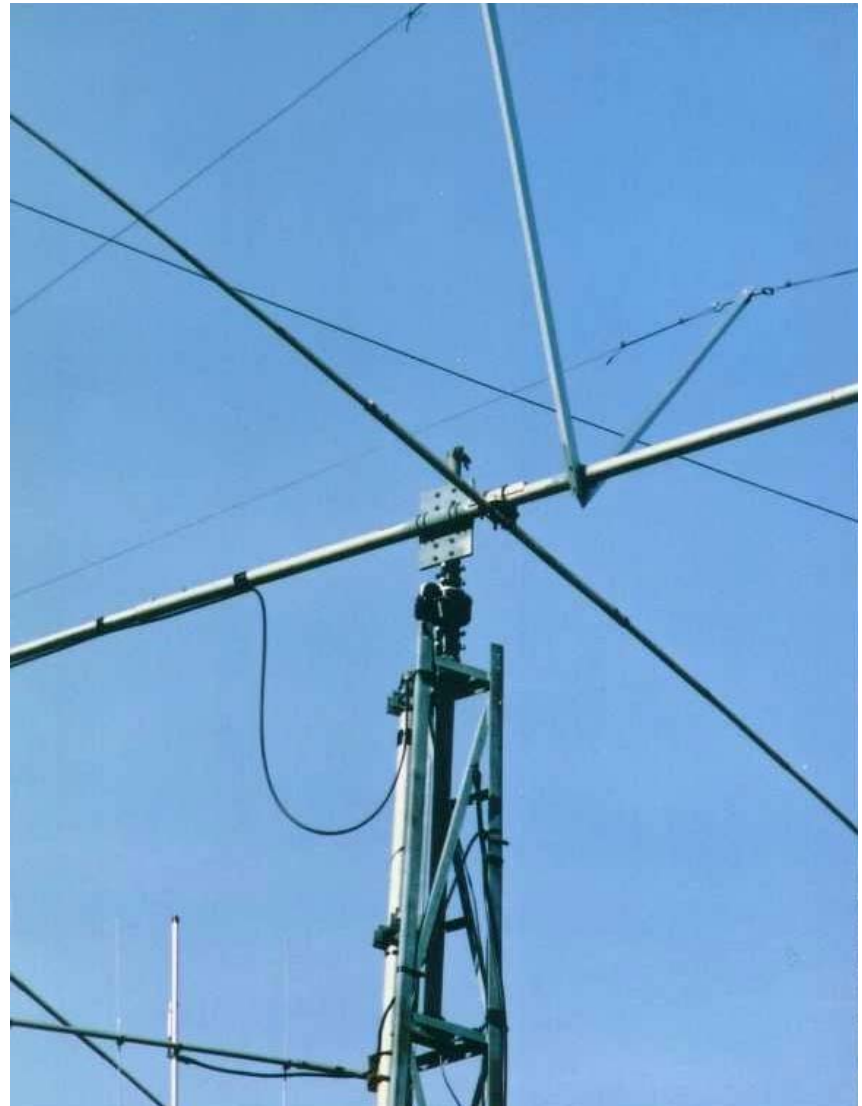


20 meter 6 El, OWA 48 ft boom, test site



20 meter 6 El, OWA 48 ft boom, test site

Where is
the fail
point?



15m stack

- OWA Design
- 44 M (145 ') At top
- 32 m (105 ')
- 23 M (75 ')
- 11 M (35 ')
- Side mount ~300 deg
- 6 Element



Side mount



Side mount gearing



Side mount on the 10



Lower 20 M Side mount “barn door” 53 “ arm



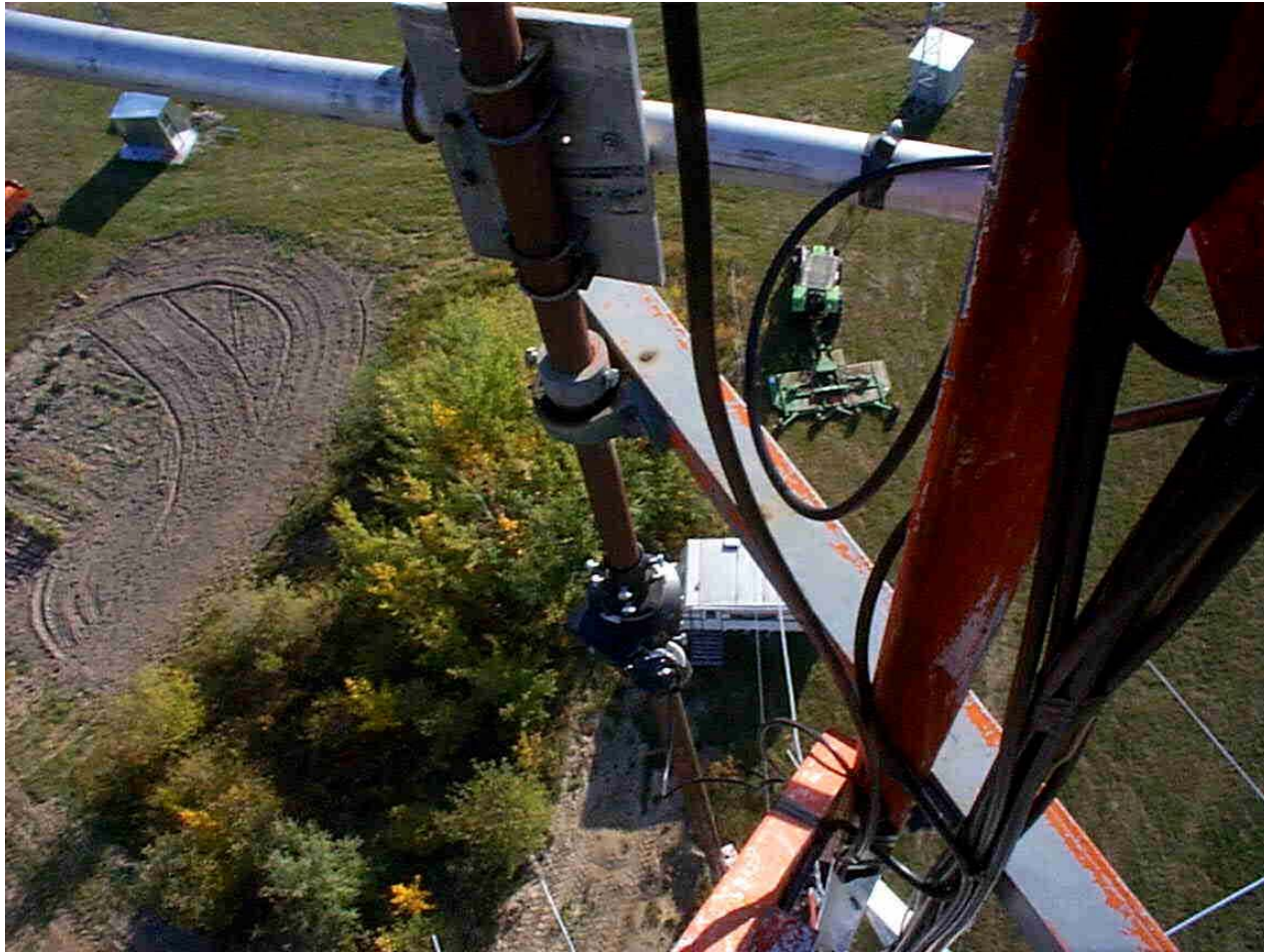
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20 M 5 el 48 ft boom



20 meter middle





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15 M remote tower



UP the stack

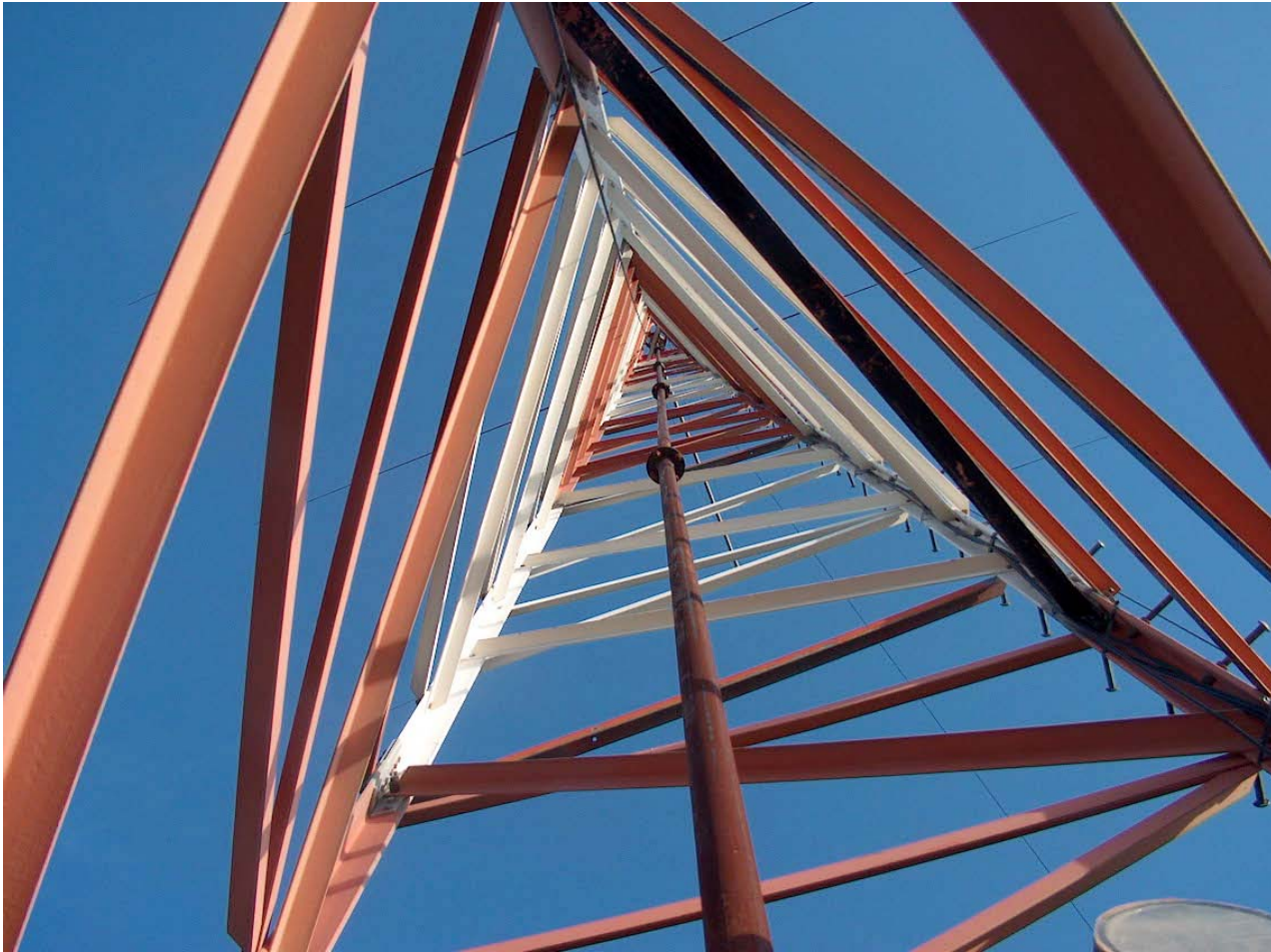
- Marks on monitor in degrees
- Use of inexpensive Video camera



40 Meter 3 EI - 40 foot boom No traps, Full size



Long torque tube

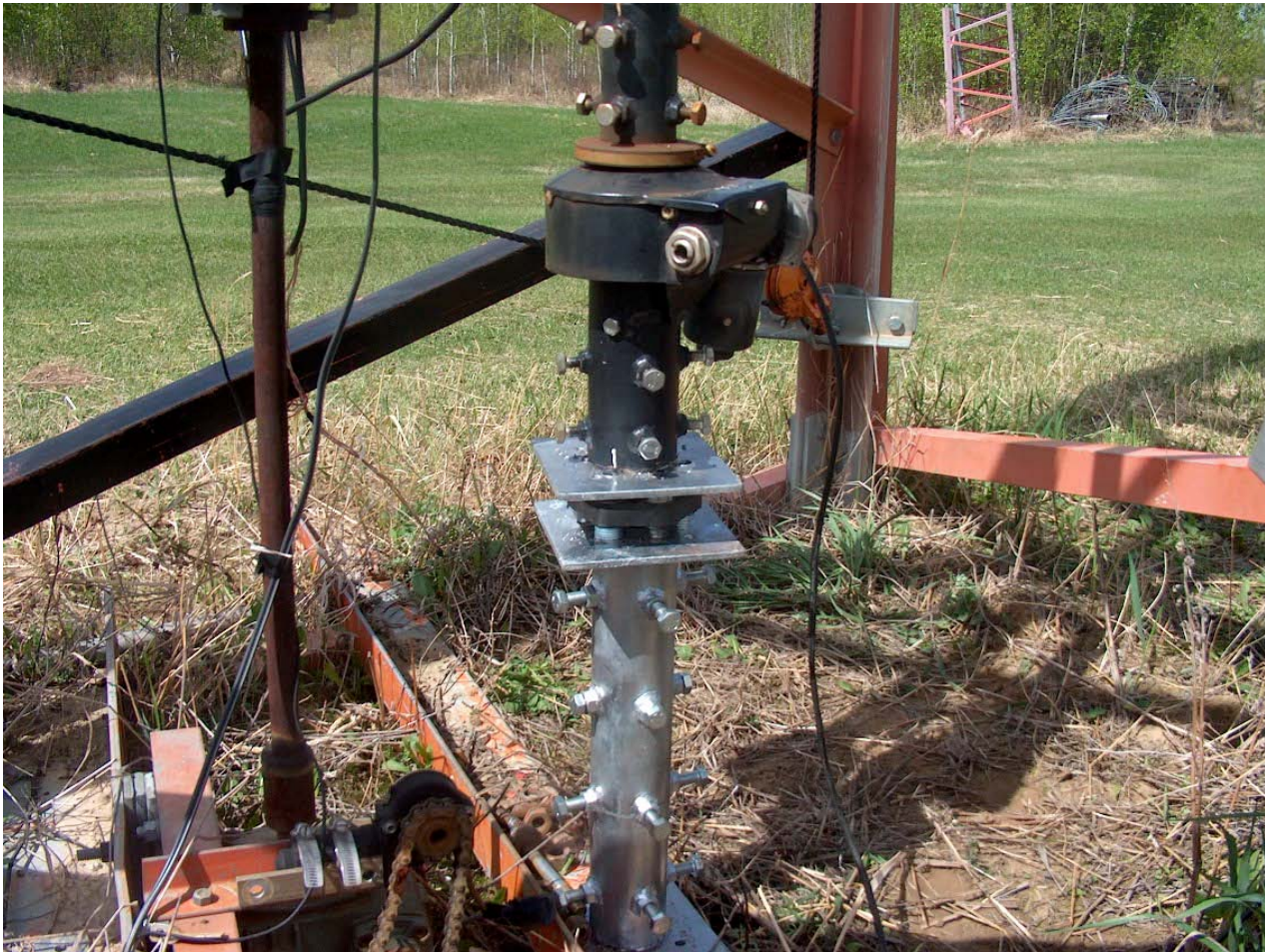


Bottom of 120 SS

- AlfaSpid rotator on bottom of 120 Foot
- 3 element full size 40 meter beam
- Long torque tube



Rotator connected Feb of 2002



From David B. Leeson Book (W6QHS) W6NL Page 7-29



80 Meter beam

- “ The 4 Elephant Antenna “ (VE6LCB)
- Boom 22.13 M (75.9 feet)
- Reflector 42.6 M (140 feet)
- Mass of one element is 73 Kg (160 Lb)
- Total mass is about 545 Kg (1200 lb)
- Tower height 45.7 M (150 feet)
- Wind balanced sail, free turning

All guyed towers use DEAD man anchors

10
feet
deep
by 2
feet
by
10



All guyed towers use DEAD man anchors No concrete



Note the driven and 1st director



80 Meter truss





80 Meter feed point.

- Balun was removed as it affected the bandwidth.
- Coax turns



80 meter bearing support

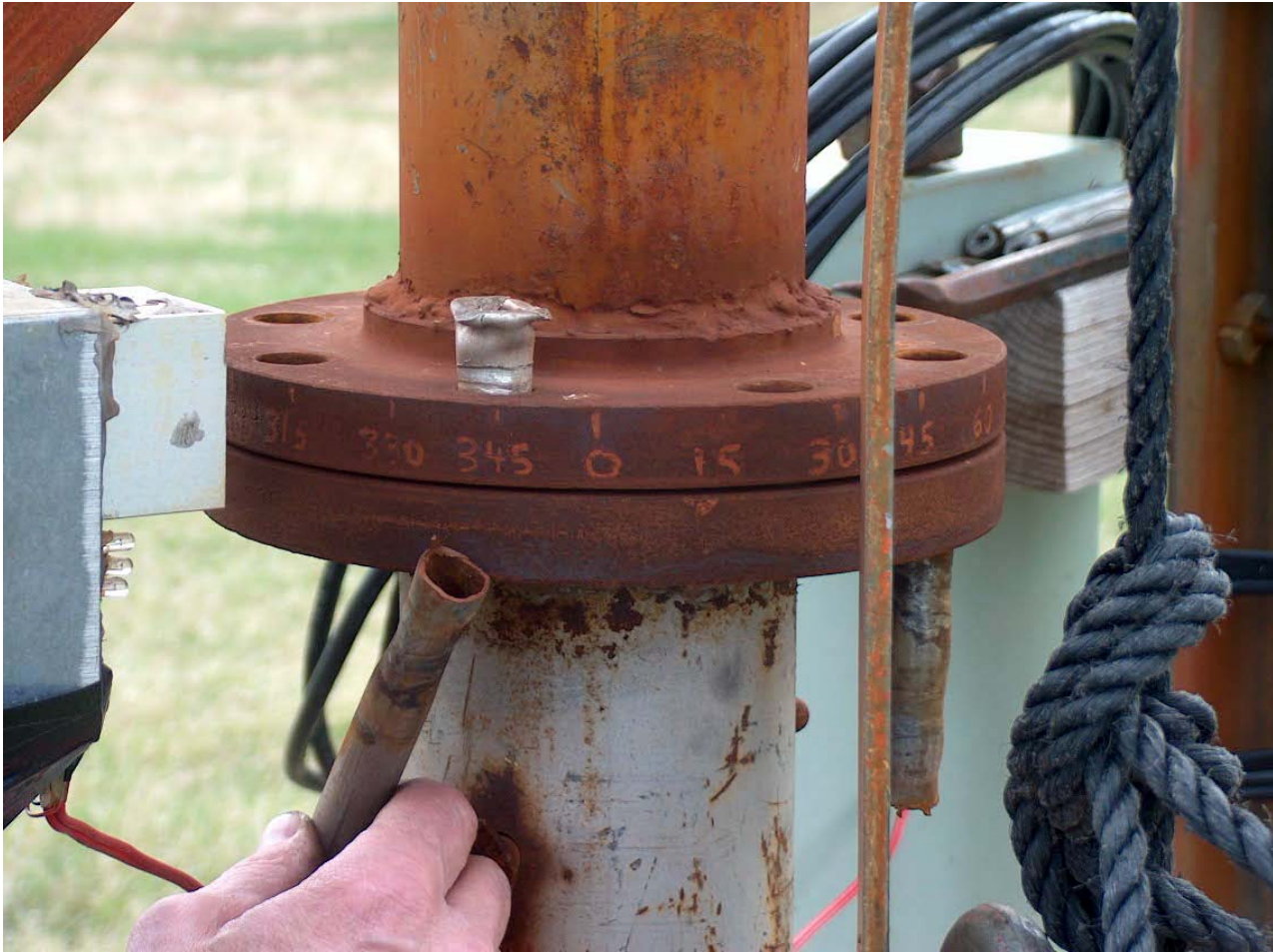


VA6DX's BOOTS



4.5 Inch OD





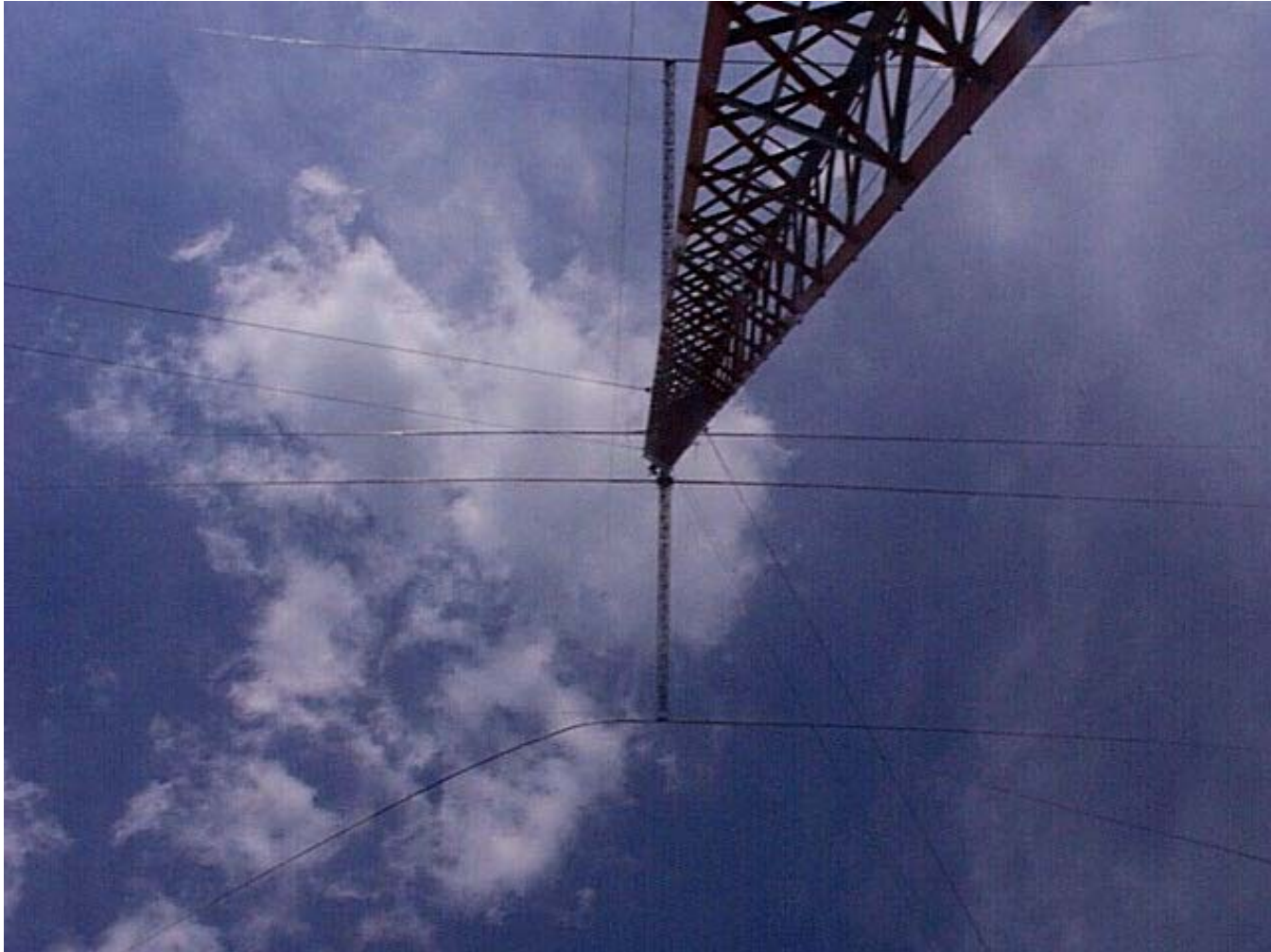


80 km/hr wind



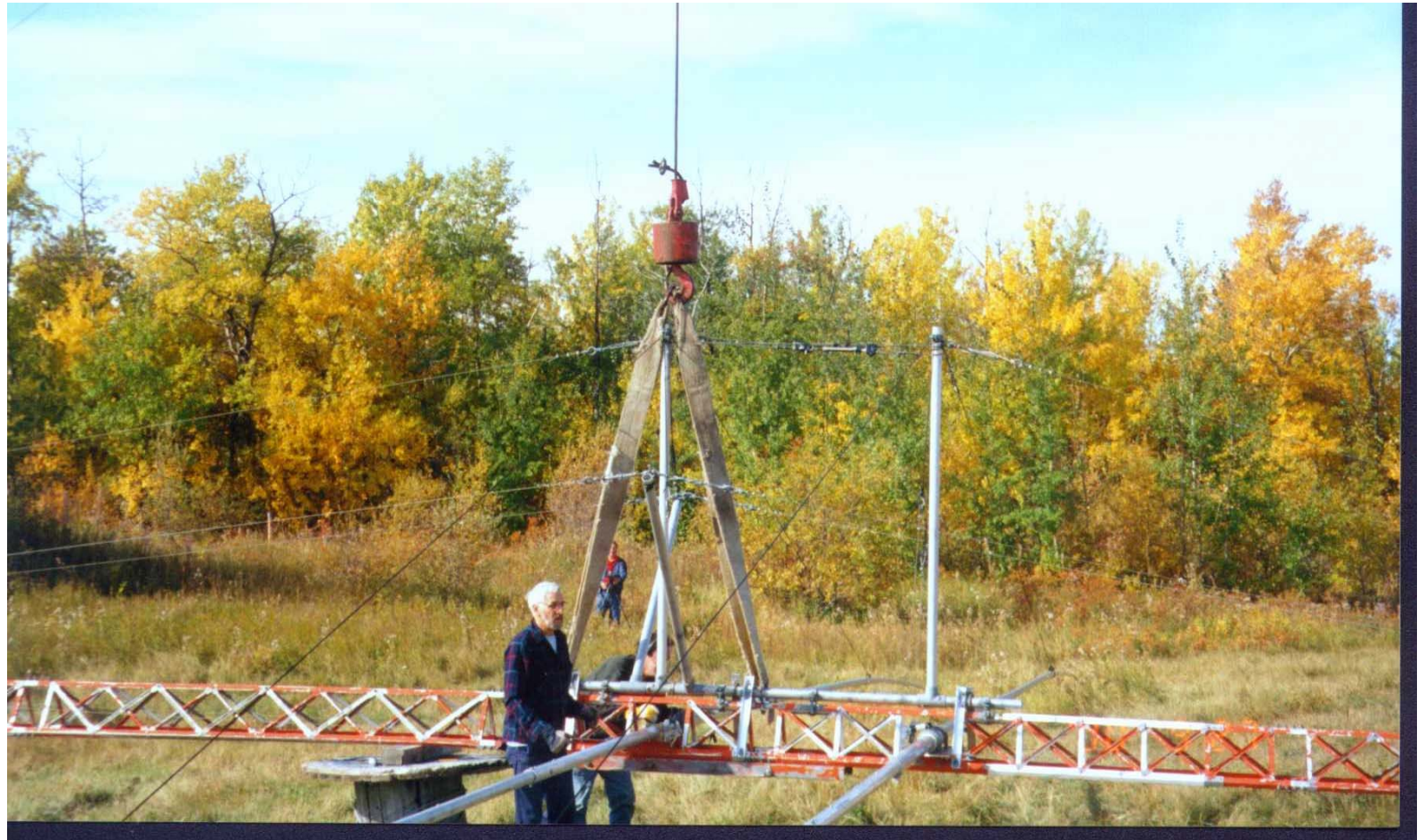


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80 METERS GOING UP Again



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UP October 1999 – about 7 years



40 meter 5 element with Ice



4 element 80 Meter with ice



Ice was approx 2.5 Inch diameter
about 1 inch thick
How many lbs on the element?



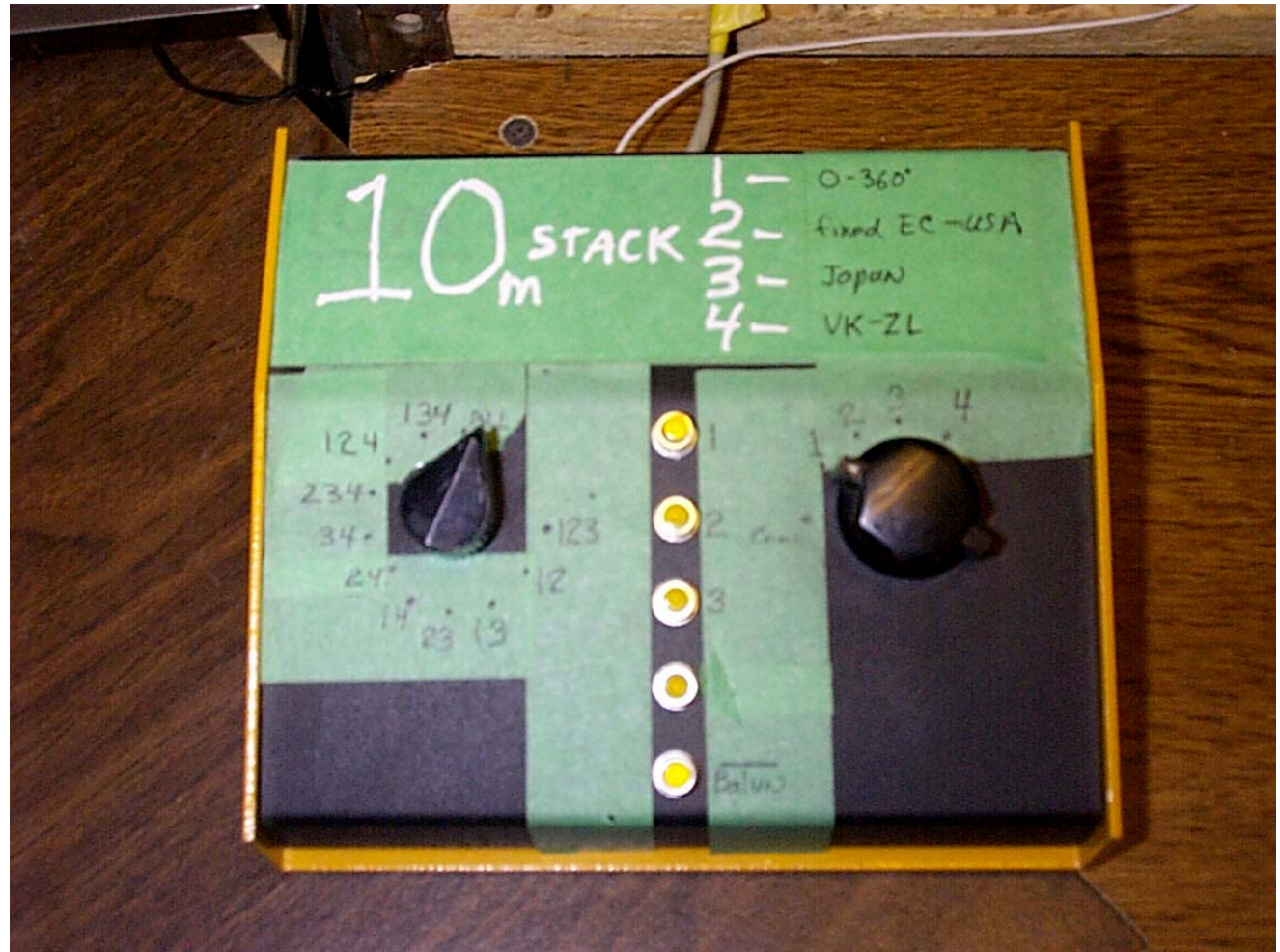
How is the time

Antenna switching systems

- One of the more difficult things is to switch the different stacks to each operating positions.
- Then to allow the operator to select which antenna or combination of antennas to use.
- Relays & coax switches are used.

Switch Box

- Right
 - Separate
- Left
 - Combine
- Quick stack switching

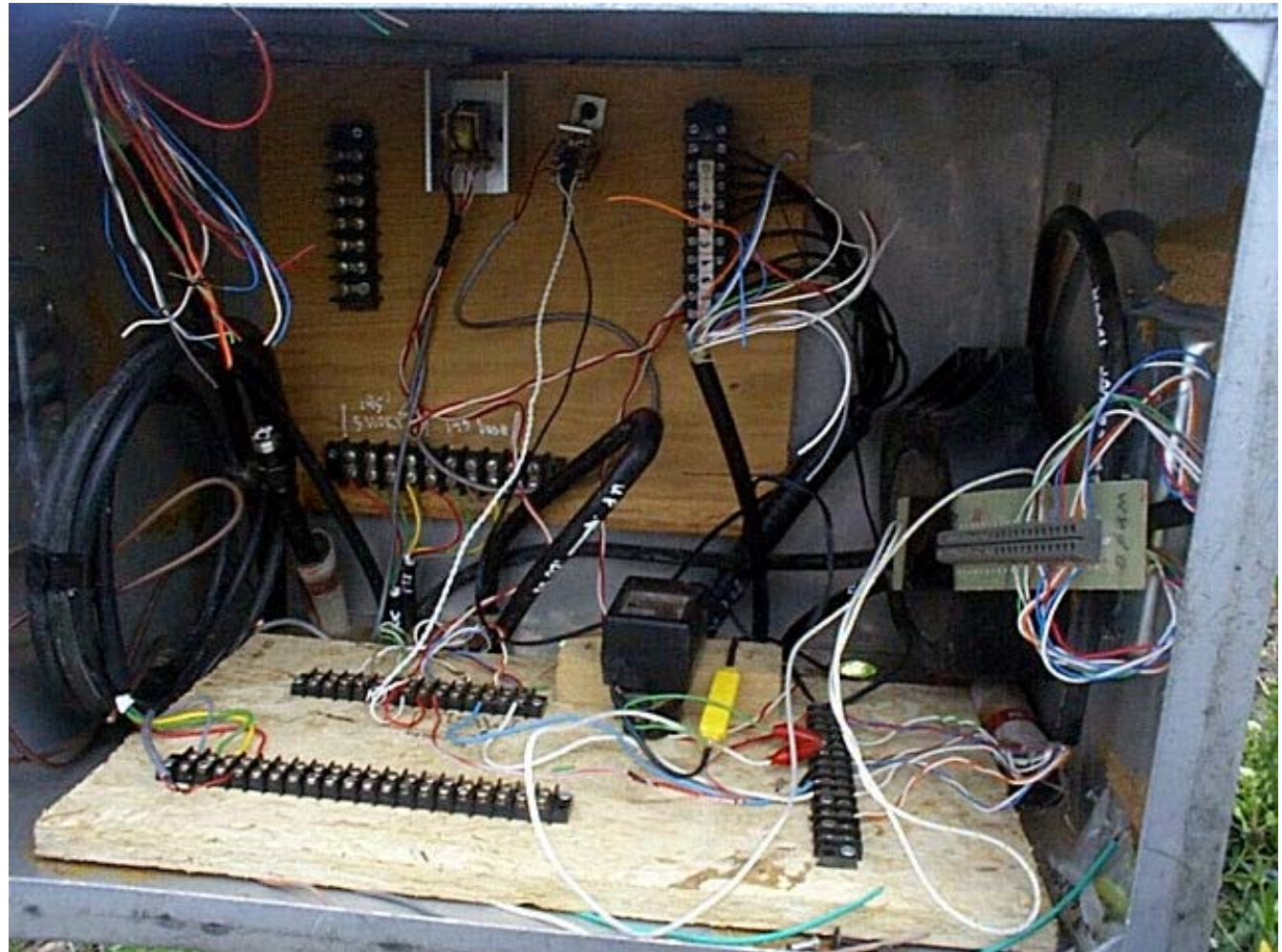


Wireless

- We say it is wireless
- Well YESSSS
- We have to get the signals in
- We have to get the power out

120' SS wiring at base of Tower

- Telco wire
- AC power
- Typical of all towers



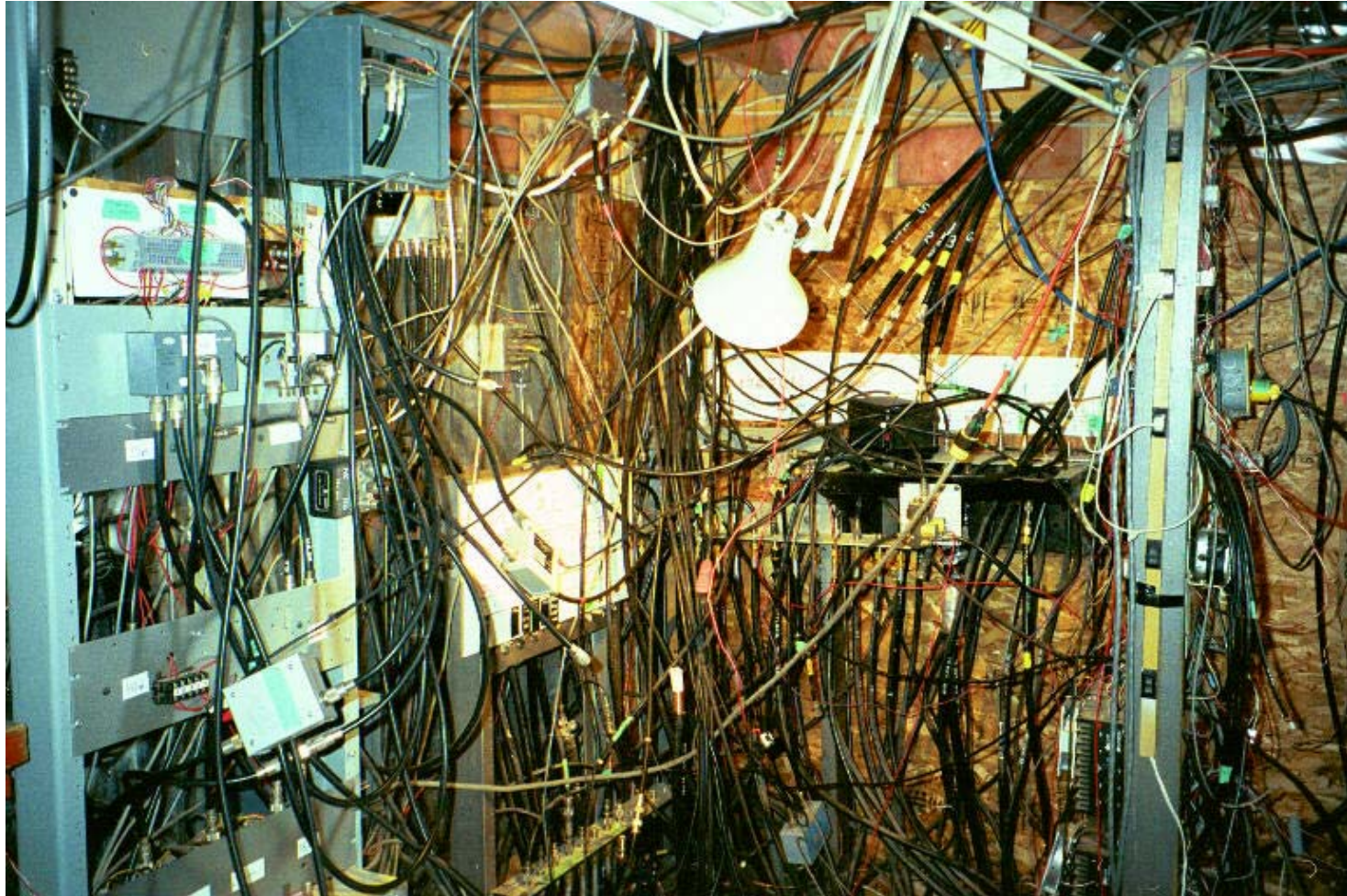


How much wire ?

- 13 K feet hard line
- 7 K feet of coax
- 150K to 200K feet of control line

- How much Concrete ?
 - ONLY 1 yard *
 - * On guyed towers

Who said Wireless ?

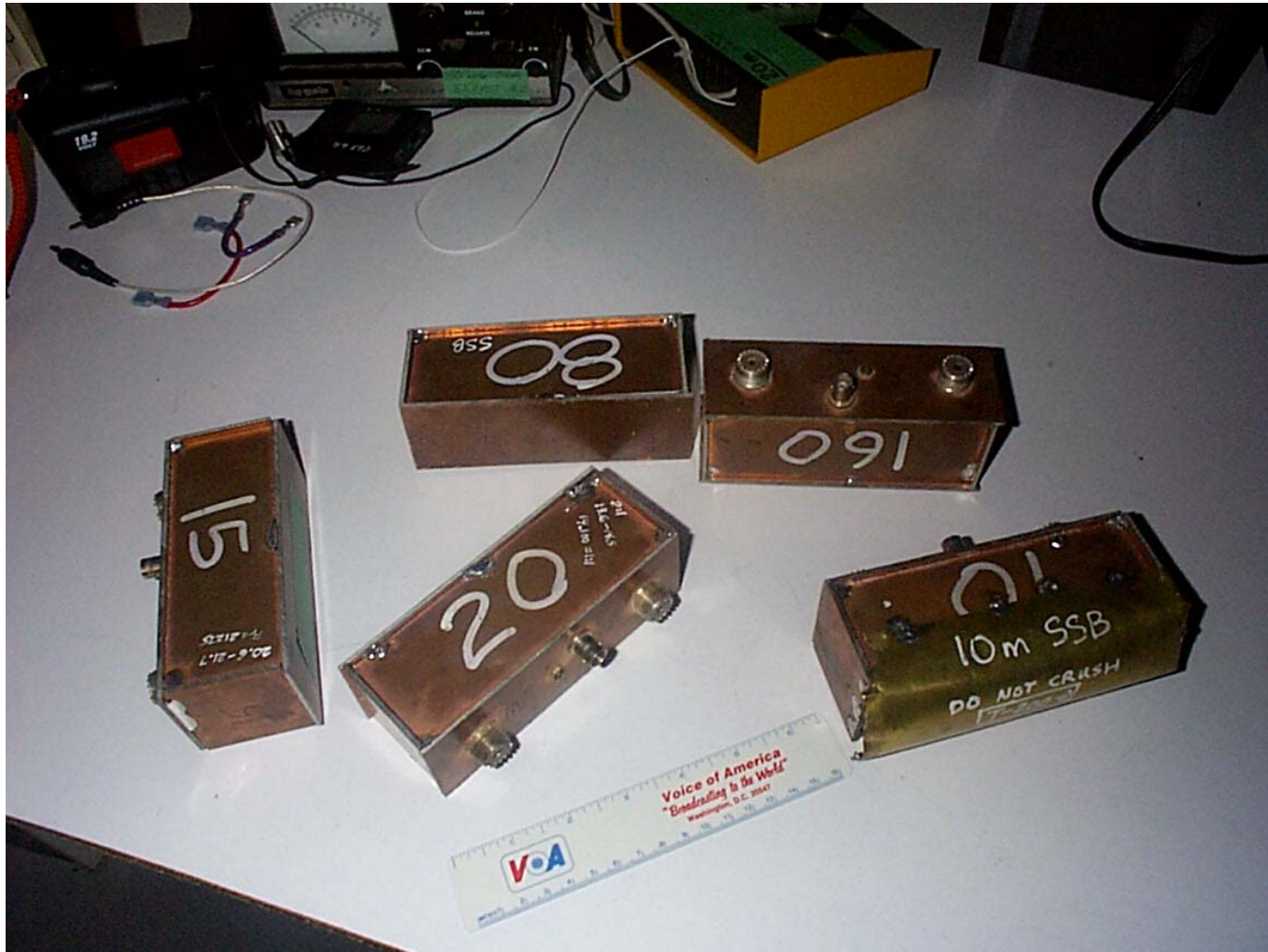


Keeping the signals out

- One of the big problems with Multi op stations is other band interference from transmitters on site.
- Use of Notch filters
- Use Band pass filters.
- Clean signal (scopes)
 - Watch the drive

Band Pass filters

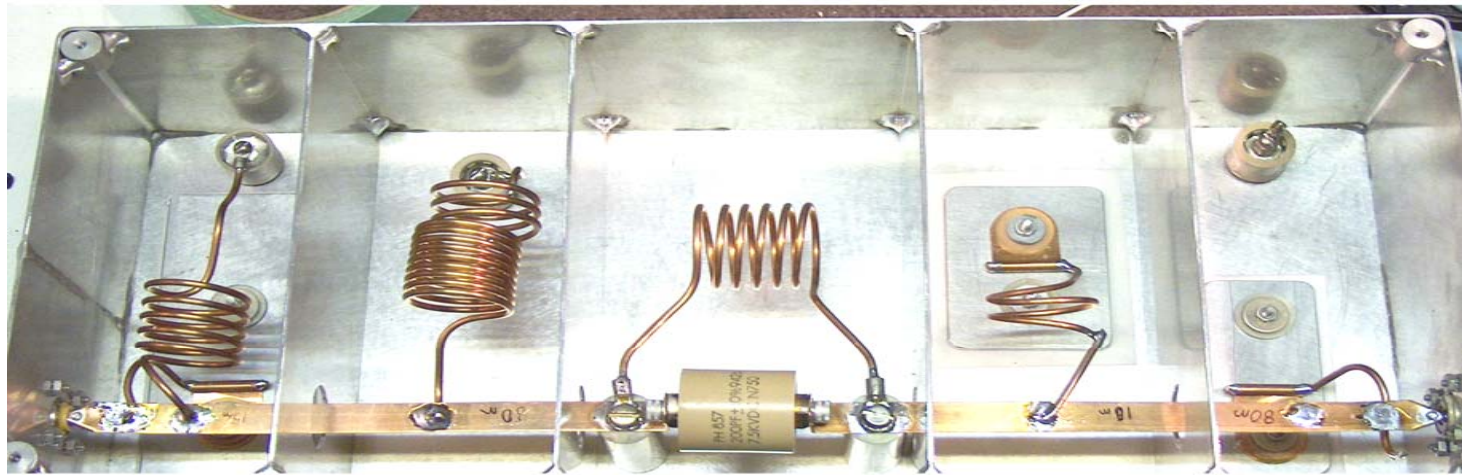
K4VX NCJ



Notch filters - Band pass

- Notch filters diagram
 - Stubs / open and shorted to act as band stop/pass filters
 - See **K1TTT** web site @ www.k1ttt.net
 - One filter on 40 is good for several KW Home brew
- Band pass
 - Pi filter good for 100 – 200 watts
 - See **K1TTT** web site or **K4VX**

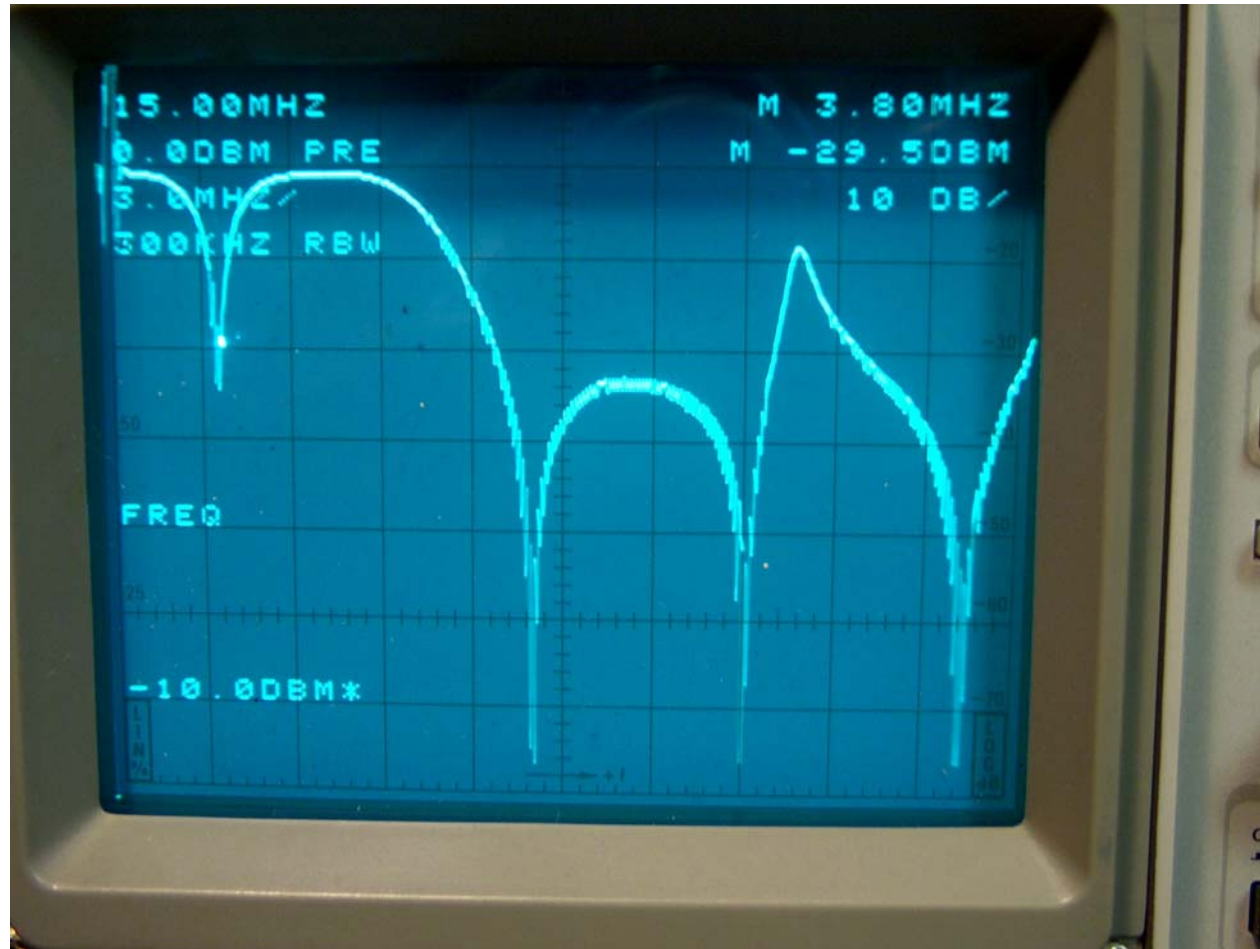
40 meter band pass filter



Good for KWatts

40 meter band pass filter

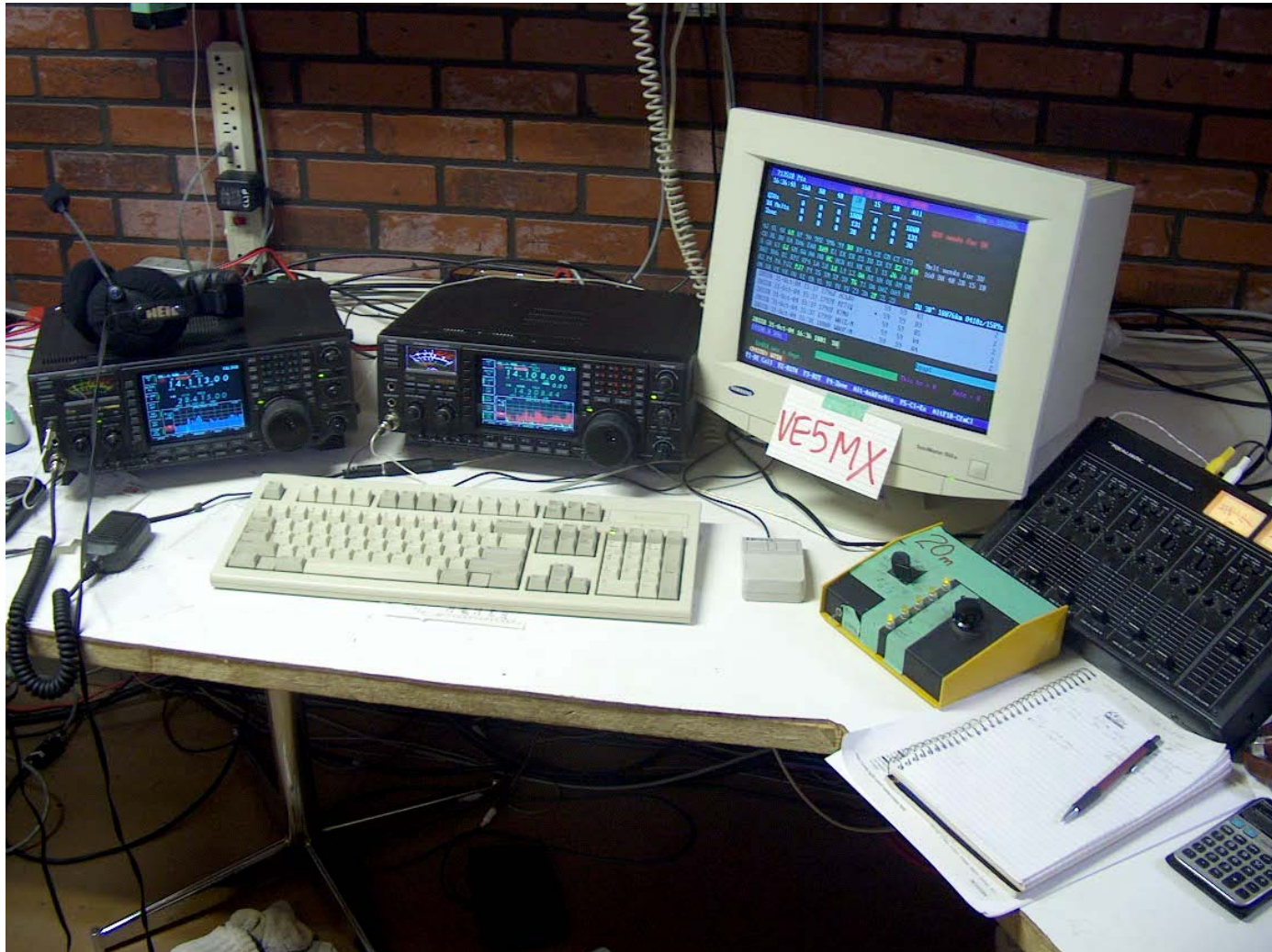
Note notches on other bands



Ever changing main console



2 radio effort. cqww



Antenna switch control centre



More toaster watts

- Cpus - are run from UPS, lights
 - ~ 5 Kw of UPS
 - 400 amp hr batteries at 48 Volts
 - ~ 20 KWHr
- Main radios are run direct from batteries.
- Wind power for charging batteries
 - Currently being tested
 - 1Kw unit

73

<http://www.alfaradio.ca/ve6jy>



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