Perspectives on 45 Years of Contest Station Building

Patrick Barkey, N9RV

Who Am I

- Licensed in 1967, CW traffic handler in high school years
- Contest bug bit hard in college
- Started in engineering, switched to economics
- Career in academics, research
- Married with two adult children, four grandkids
- One of seven siblings – I am the only one who owns a socket set

An Economist is Going to Tell You How to Build Something?

- Plenty of expertise out there on antenna design, propagation, terrain analysis, and a host of other technical topics
- But there is something missing: how to turn designs into reality
- Some hams build contest stations wherever they go
- Many contesters never build stations
- Sharing my story might inspire you to do better

My Contest Station Building History: 1972-74

WA8SWM (now W7WM), Michigan

- First guyed tower (80 feet of Rohn 25) at WA8SWM's parent's house
- Monobanders on 20/15/10 better than anything we'd ever used
- Too many stupid and unsafe things to ever remember them all
- Won the WW CW for W8 with a score of 629,000 points!!
- Lessons learned:

  - You need a 40 meter beam
  - 160? What's 160?

My Contest Station Building History: 1975-84

NA8V (then WA8TBQ), Michigan

- Great countryside location at NA8V's parent's house in rural Michigan
- Many failed iterations for the first five years
- Eventually built a large station with four towers
- Some good contest scores as WA8YVR (#2 in WW CW 1982)
- Lessons learned:

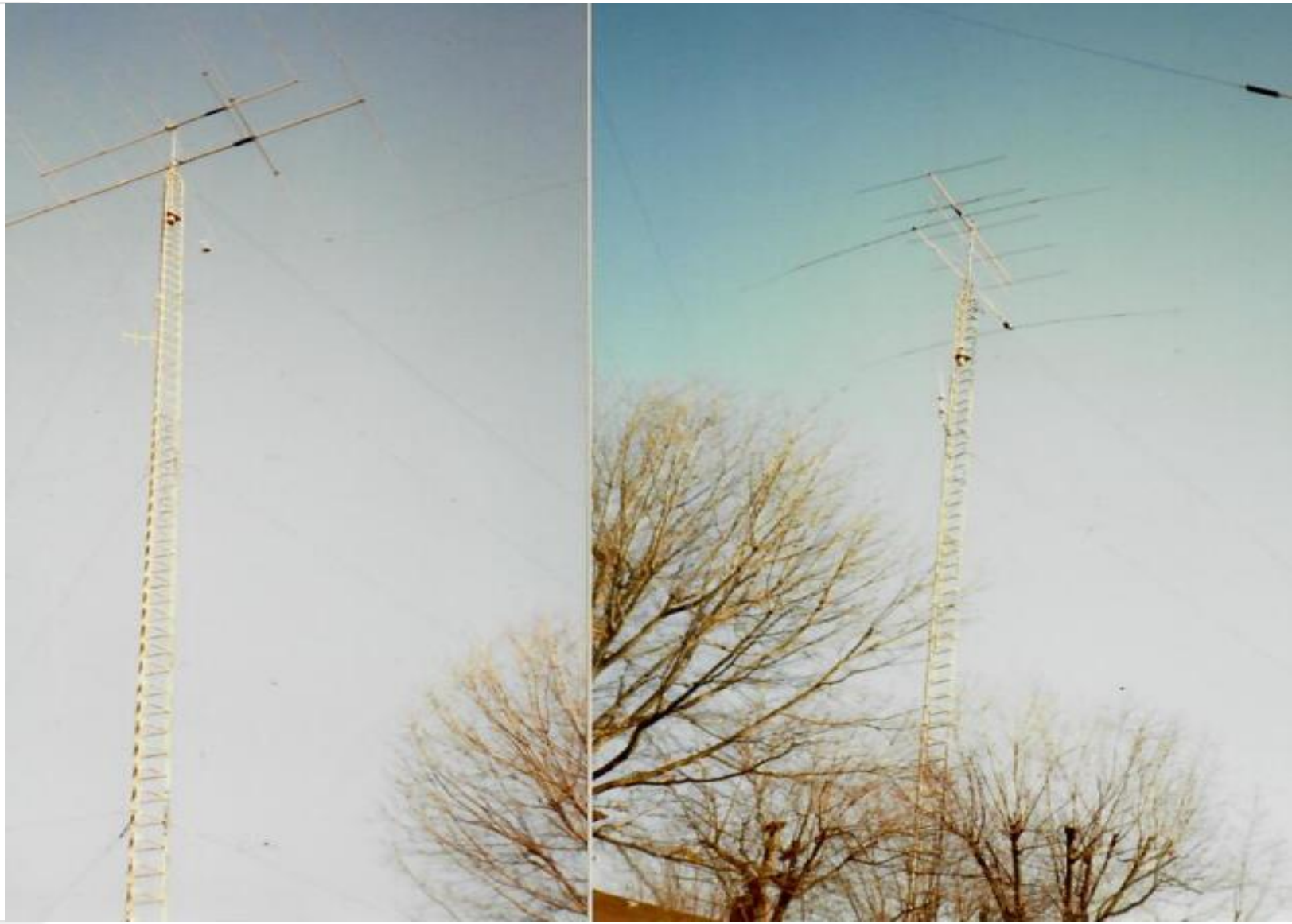
  - bury feedlines!
  - competitive antennas for 80/160 needed

My Contest Station Building History: 1990-93

WA8YVR in Columbus, Ohio

- First home station since high school
- Acquired a two tower station, was in the process of installing two new towers when QSY'd to W9
- Lessons learned:

  - Towers and neighbors can work
  - Prop pitch rotors are nice
  - Stacks matter

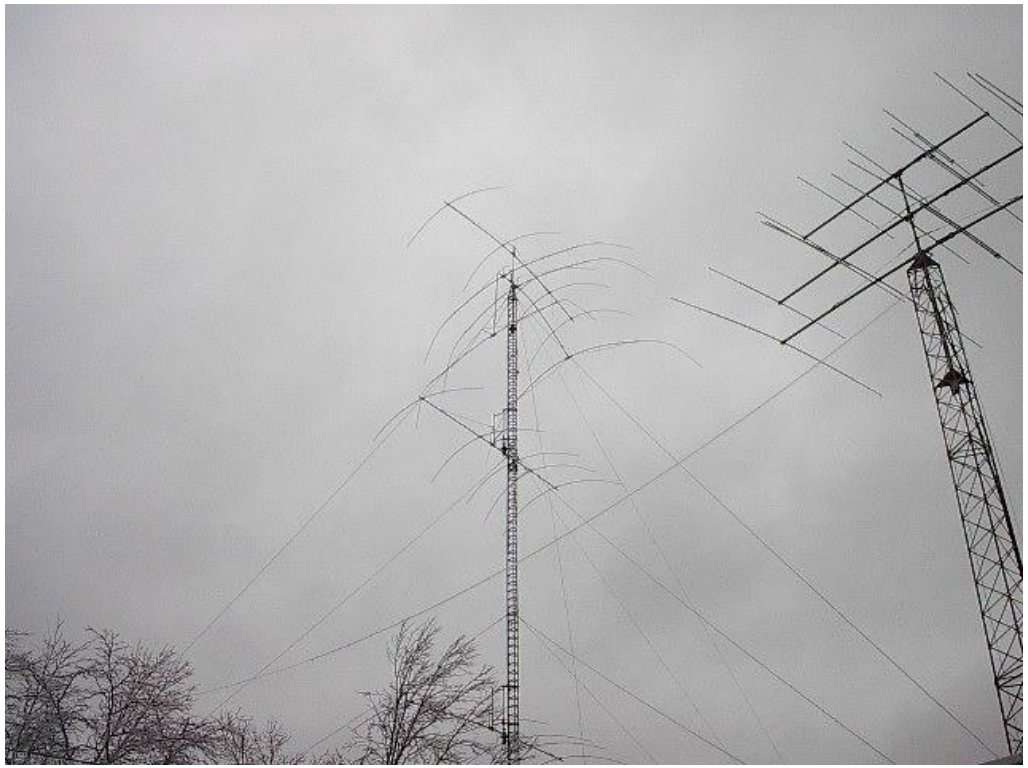


My Contest Station Building History: 1994-2007 N9RV in Indiana

- First green field station of my own – 30 acres
- No temporary antennas! Full plan was executed from the outset
- Third tower went up in 2001, fourth was 2/3 done when QSY'd to W7
- External building built for shack and workshop

N9RV in Indiana: Lessons Learned

Make sure your antennas are insured



N9RV in Indiana: Lessons Learned

Don’t put up towers you don’t like to work on

N9RV in Indiana: Lessons Learned

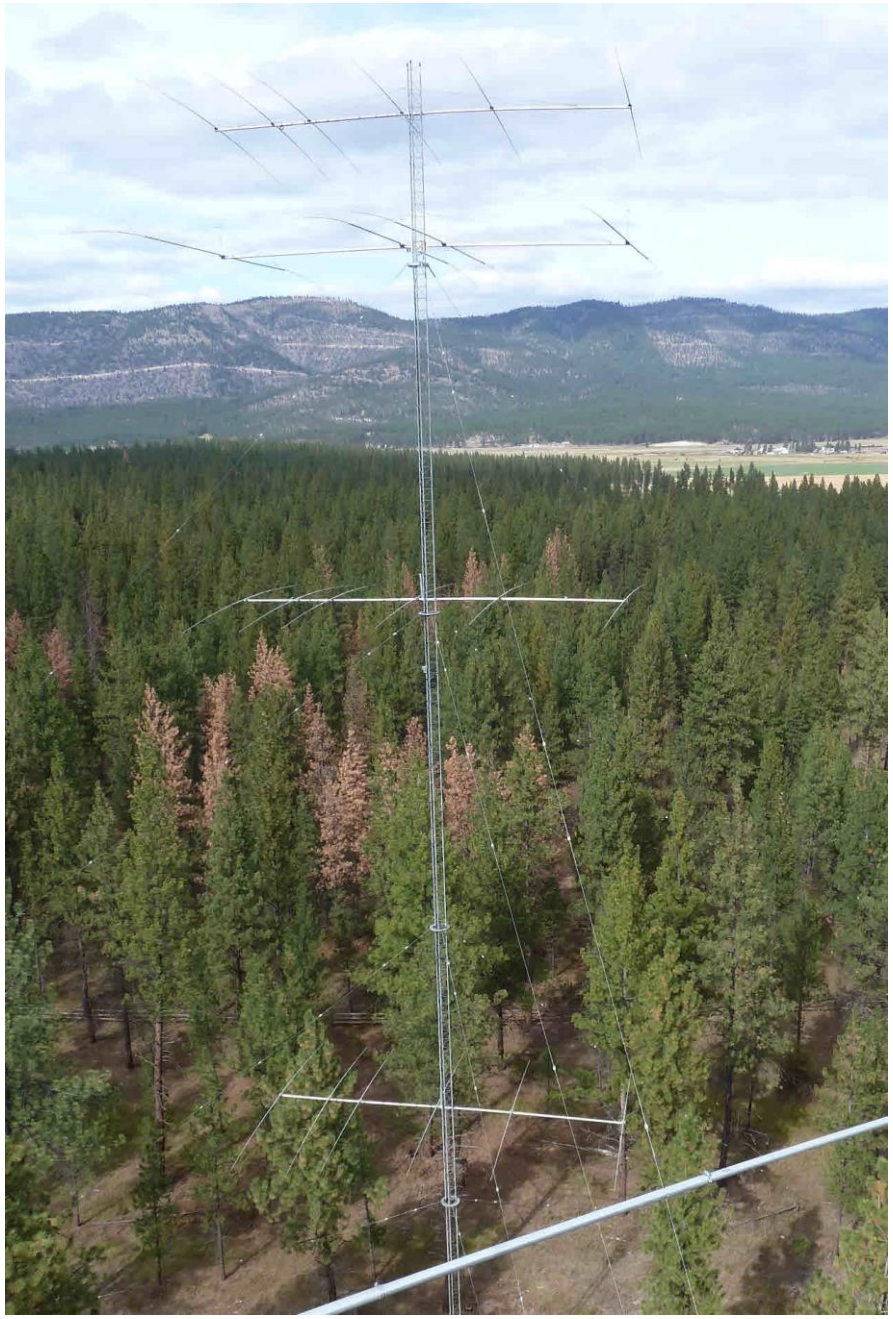
Outbuildings make great shacks

My Contest Station Building History: Since 2007

N9RV in Montana

- Totally different environment (trees/mountains)
- No chance to be competitive in DX contests – but SS?
- Moved only the antennas and towers I planned on using

Rotating 180’ of Rohn 55 with 6/6/6 on 20 meters and 4 el OWA 40 meter yagi



40 meter yagi being launched

Rotating R55 tower with 10 and 15m stacks & 2 el 40

Transported tower 1,700 miles from Indiana!

Pirod tower with independent rotary yagis for 20/15/10

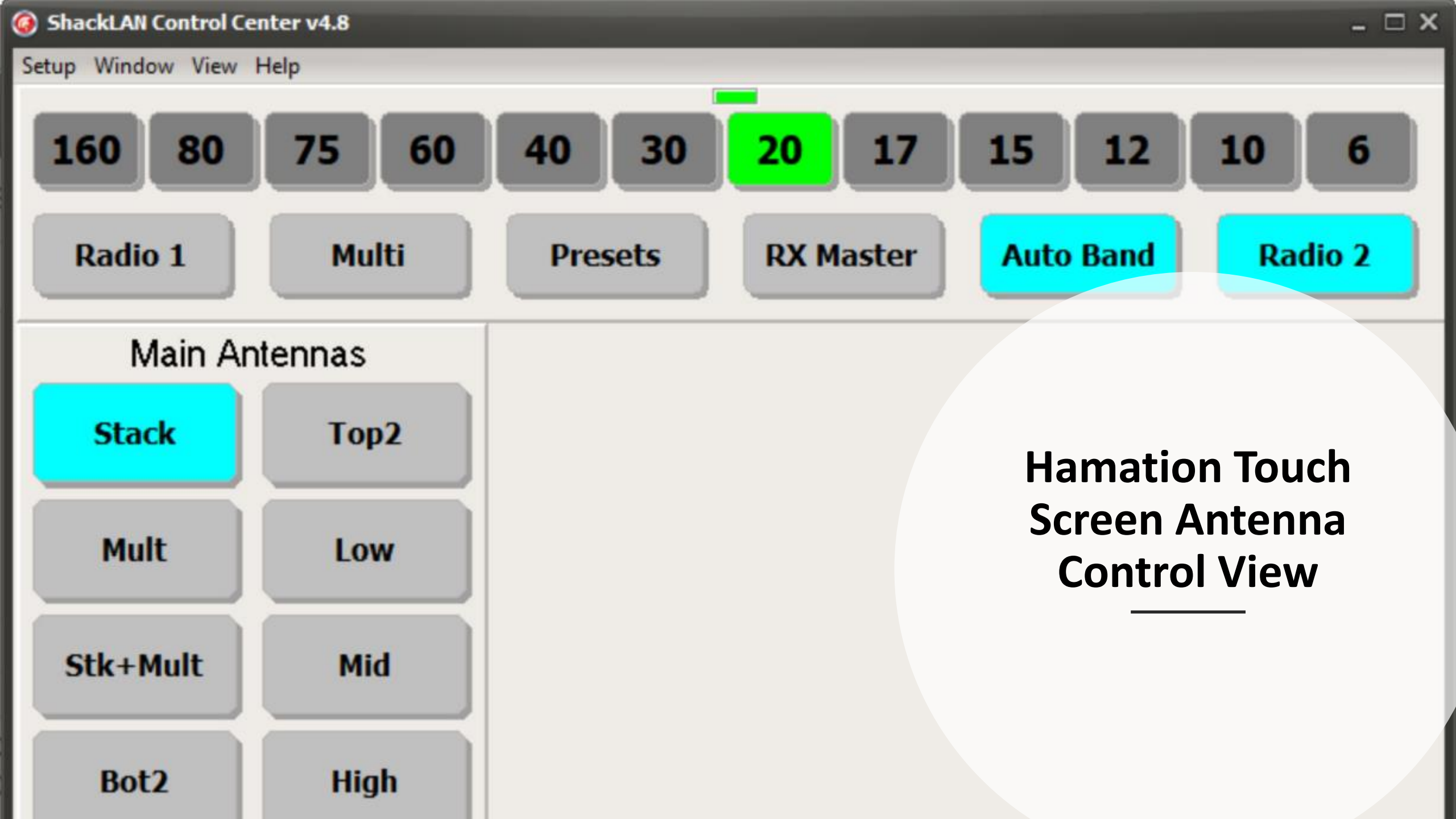
80 meter
Four Square

Parasitic reflector/director wires for 160m

160 vertical – base insulated Rohn 25 tower

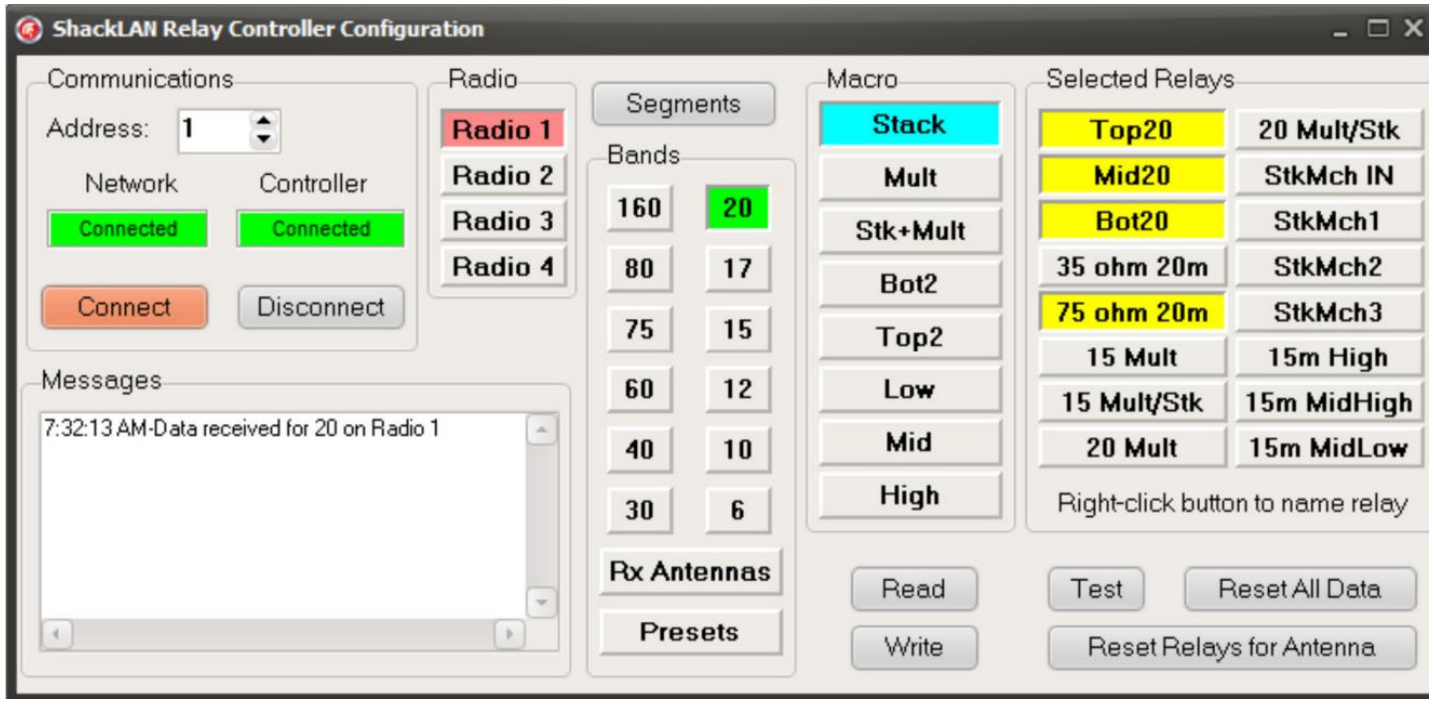
Current N9RV Operating Position

Remote Switch Hut is Central Node for RF Switching/Stubs



Hamation Touch Screen Antenna Control View

Hamation Configuration Screen



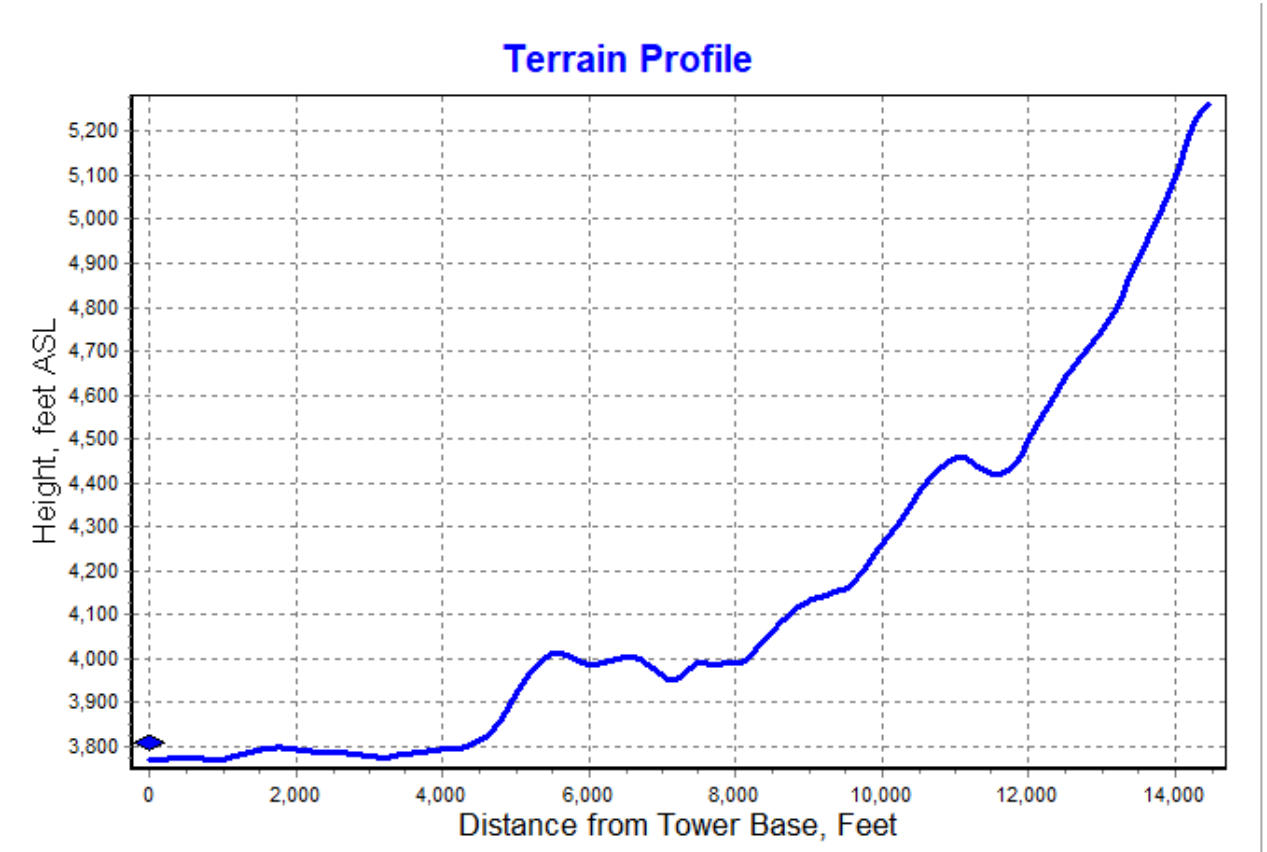
Lessons learned: Moving is a great time to downsize!

240’ of Riverview Tower, trailer headed to recycler

Antennas, Rohn tower, prop pitch rotors heading to MT

Lessons Learned:
All Property Decisions Involve Compromises

- Lot size of 5.5 acres was adequate, but smaller
- House did not have a ham room
- Terrain to the south blocked by a mountain



Contest Station Building: So Many Questions

Should I build a station?

What kind of station should I build?

What are the basic steps?

How can I build a station that is (i) affordable? (ii) reliable? (iii) effective? (iv) safe?

Should I Build a Contest Station?

- Some people just like to operate
- Some people enjoy being weak
- Contest stations require time, resources, and the willingness to make compromises
- And an understanding family!
- And who likes fixing stuff?
- But you don’t have to be an engineer …

- Without contest stations there would be no contests
- Having your own station is the best way to operate a lot
- Planning and executing a plan to build a station is tremendously satisfying (but sometimes frustrating)
- Adding and building to your station keeps the buzz going

Operating from C6A

N5AU in 1981

What Kind of Station Should I Build?
It depends on who/where you are and what are your goals

- Coastal Maine or northern North Dakota?
- Dxers only need to be loud in one direction
- All band capability is a must for most of us
- The definition of “big” keeps changing

What Kind of Station Should I Build?
It depends on who/where you are and what are your goals

Tower mounted yagi(s) for 20/15/10 is basic

Ability to spread RF in multiple directions is useful

Monobanders and stacked yagis are the “ticket to the dance” for DX contests competitiveness

N9RV Station Objectives

- To be “the guy to beat” in DX contests from my area
- Needed to be 2-radio capable
- Multi-op possible, but not a priority
- Phone and SSB capable, other modes not important
- Stacks on 20/15/10, full sized yagi on 40, gain antenna on 80
- Copied many ideas from other stations
- K3TUP: Stack, fixed SE antenna, and independent rotary yagi for 20/15/10
- KC1XX: Switch hut for RF away from main shack
- W9RE: North stop rotor for multiplier antennas

- **The Basic Steps of Contest Station Building**
  Step 1: Get a QTH

- Most contesters never get past this step
- You don’t need to solve the nation’s problems of HOAs and Zoning Restrictions. You just need to find a place you can set up.
- The objective of contest station building is to be loud into Europe. It is not necessarily to be the most popular person in your neighborhood.
- QTH selection involves tradeoffs and compromises. Some (commute time) may be easier than others (K12 school quality).
- Talk to people who have done it in your area, don’t dwell on the stories of those with attic antennas.

K9RS/3

Perkasie, PA

Built this very effective one tower contest station in EPA. Spent six months persistently seeking a building permit after moving in.

KL9A/W7

Shawmut, MT

Probably doesn’t have the same issues!

- **The Basic Steps of Contest Station Building**
  Step 2: Acquire your “stuff”

- Another stumbling block for many – contest hardware is expensive!
- But many of the things you need for a contest station do not have to ordered from a catalog.
- The art of the deal: with time, ingenuity, energy and maybe a two axle trailer, you can get a lot of things you need.
- Learn what is worth having and what is junk
- Some things are too important to buy used (especially when they impact safety)

Opportunities for Contest Station Builders

Teardowns of Existing Stations

- Contesters/DXers move, downsize, go SK
- Taking down towers/antennas, done safely, can yield “core” items like towers, and many “extra” and “throw in” items
- Sell off stuff you don’t use
- Rusted Spaulding tower, old TH6’s – NO
- Rohn tower, rotating rings, even Philly or guy wires – YES
- You can adapt your plans based on what you acquire within reason
- All N9RV towers and rotors are teardowns

Opportunities for Contest Station Builders

Building your own antennas

- Monoband antennas are easy and fun to construct
- Aluminum bulk purchasing prices fall with the size of the order, sometimes substantially
- May need to utilize multiple vendors to get best prices
- Collaboration with other station builders can reap rewards when combining orders
- The same is true for muffler clamps – which can be galvanized
- McMasterCarr is an absolutely amazing resource

Random Notes on Station Construction

- Rotors are another costly item that are failure points in many stations
- Prop pitches need not be expensive, and are fun to refurbish
- Guyed towers are preferred, Rohn 45/55 is the best
- Absolutely do not compromise on guy anchors, guy hardware, bases and other safety related items
- If you are doing something different than the Rohn book recommends, don't!

- Your recycling facilities can sometimes be fertile ground for scrounging
- CATV coax used to be a great option for feedlines
- Use of cranes for tower and antenna installation is sometimes cheaper than you think
- Rotating towers are addictive

Perspectives and Observations

- I remain surprised at how many contesters do not have stations
- My stories of building my stations may have no relevance for your situation
- But the satisfaction of contesting with the station that you have yourself built is tremendous
- Some of these lessons might apply to you
- Persistence – you are pursuing your passion
- Flexibility and willingness to compromise
- Ingenuity and resourcefulness in assembling your hardware and executing your plan
- Next year we will talk about maintaining it all!