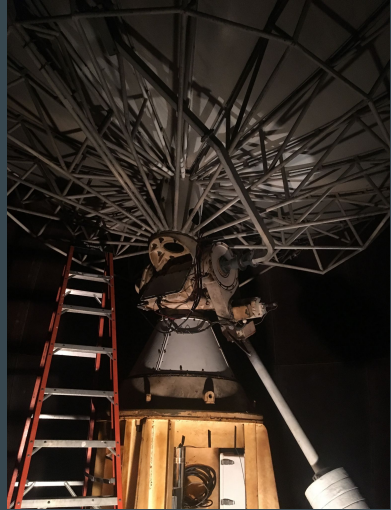
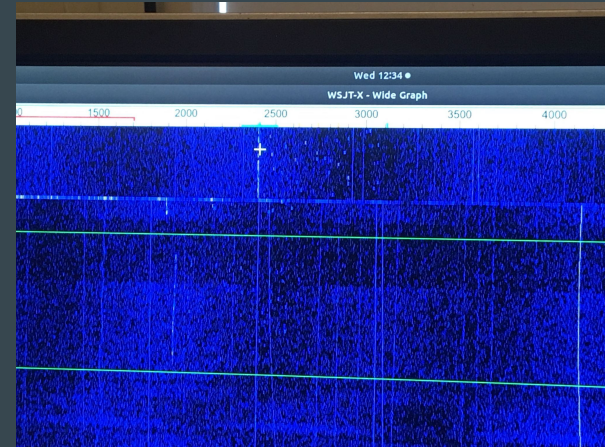


1296 Remote Moonbounce @ W1XM

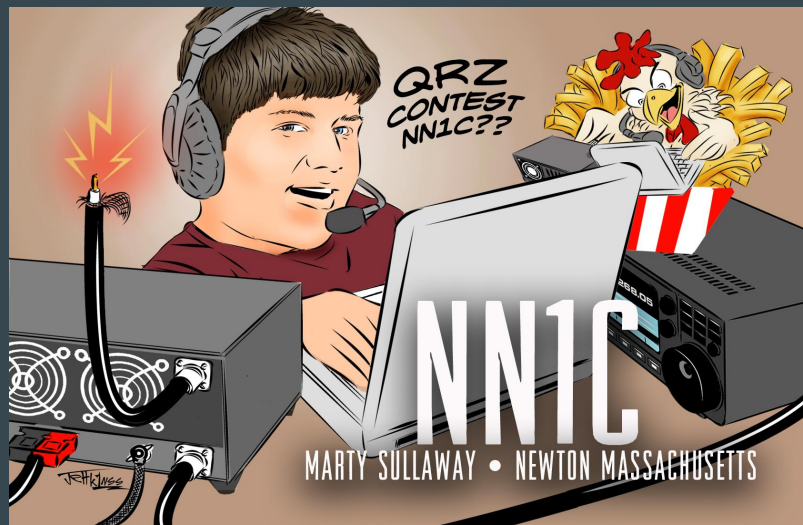


Marty Sullaway, NN1C



Some housekeeping notes...

- Who the heck am I?
- What is this presentation? What isn't it?
- So what in the heck is he going to talk about?



Station Background

- Green Building (Building 54)
 - Built in 1964
 - Tallest building in Cambridge, MA...that's finished
 - Houses the Department of Earth, Atmospheric and Planetary Science (Geoscience)
- Dish itself was designed for the WR66 S band radar.
 - ~0.4 f/d 18ft diameter
 - Big dish for 1296, normally, ~6ft is plenty!
 - EAPS Dept had dish sitting for years
- Jedi Design Master: Daniel, KC1EPN

W1XM 18' Dish With Marty



View From The Dish



Technical Challenges

- No nice shack
- Old, archaic control hardware
- Low budget
- Remote storage closet

W1XM 18' Dish



The "Shack"

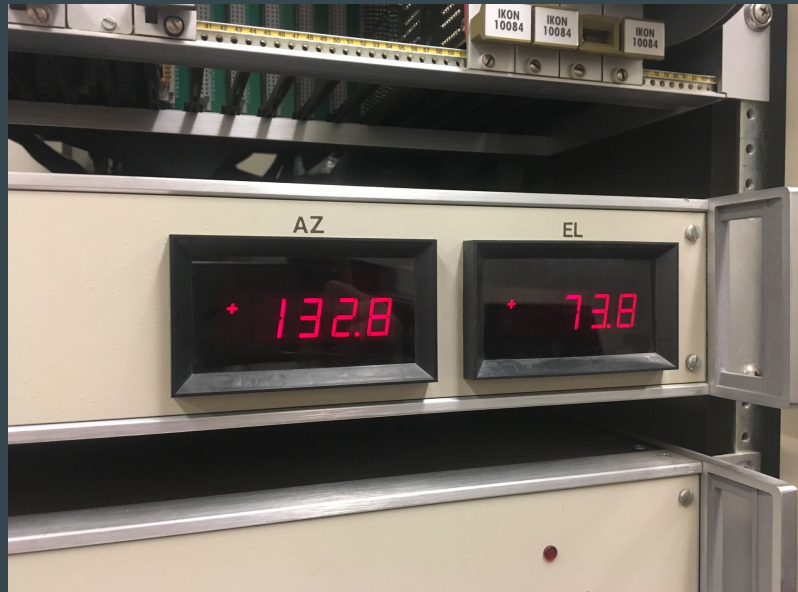


....Annnnd the inside

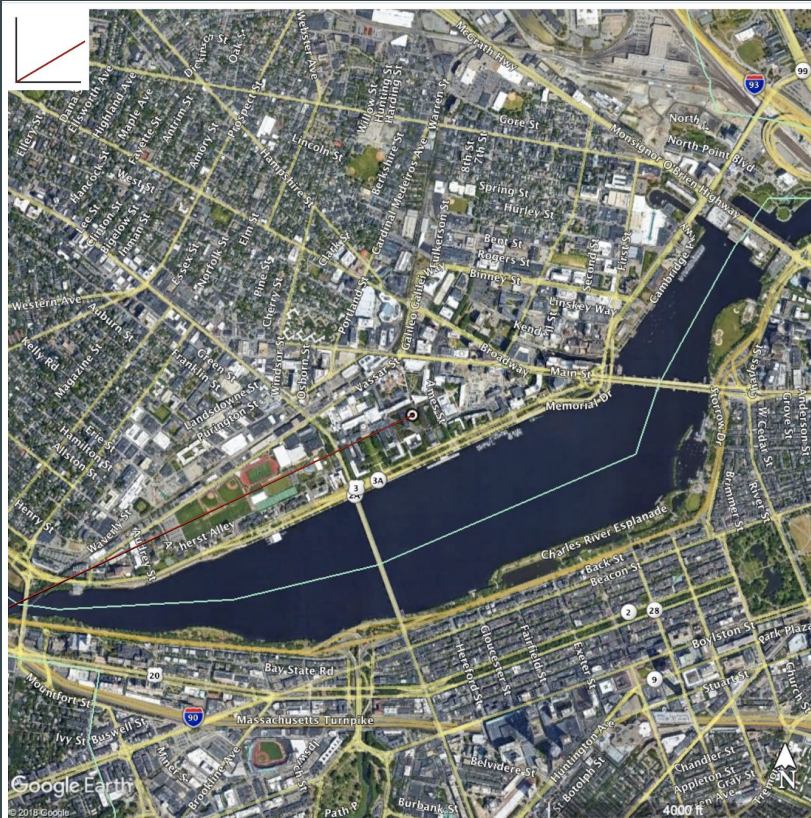


Az/El Controller -- Old and Difficult

- SCR 584 pedestal
- Server → Teensy Controller USB → ancient HP parallel bus → Az/El Control
- Web app for full remote control running on blade.



Web Az/EI GUI



Connection [read-only](#) [Log in](#)

Sequence Number 556

Status

Raw [15, a9ff, 19b4, fffd, e, ffff, ffff, fff, 0, 8000, 0, 0]

Diag 21

Azimuth **244.557°**

0-0.016°/s

Elevation **030.645°**

000.077°/s

In Mode

Sequencer TX

Command

Raw [15, aa11, 1111, 1, 19a3, 0, 1, 0, 0, 0, 0]

Diag 21

POSITION

Azimuth **244.656°**

024.000°/s

POSITION

Elevation **030.552°**

000.000°/s

Tracking NONE

STOP HARD STOP

Track **NONE**

- Sun
- Moon
- Mercury
- Venus
- Mars
- Jupiter
- Saturn
- Uranus
- Neptune
- Pluto
- Polaris
- Vega
- Cygnus A

Sequencer RX Ref

RX Ref

RX Ref

RX Ref

Azimuth Offset **00°**

Elevation Offset **00°**

The RF Side Of Things - Signal Chain

- OK1DFC style septum feed.
- $\sim 0.35\text{dB}$ nf LNA (Mini Circuits)
- High pass filter
- Second stage amp (Mini Circuits)
- BPF
- W6PQL $\sim 500\text{w}$ Amp
- Rotary Coupler
- LimeSDR



Shack to Dish -- 300 ft by USB Fiber



It just works!

- Thanks!
- Questions?
- I probably can't answer them...