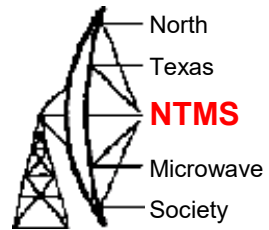


To Tucson and back – recon report of new roving locations

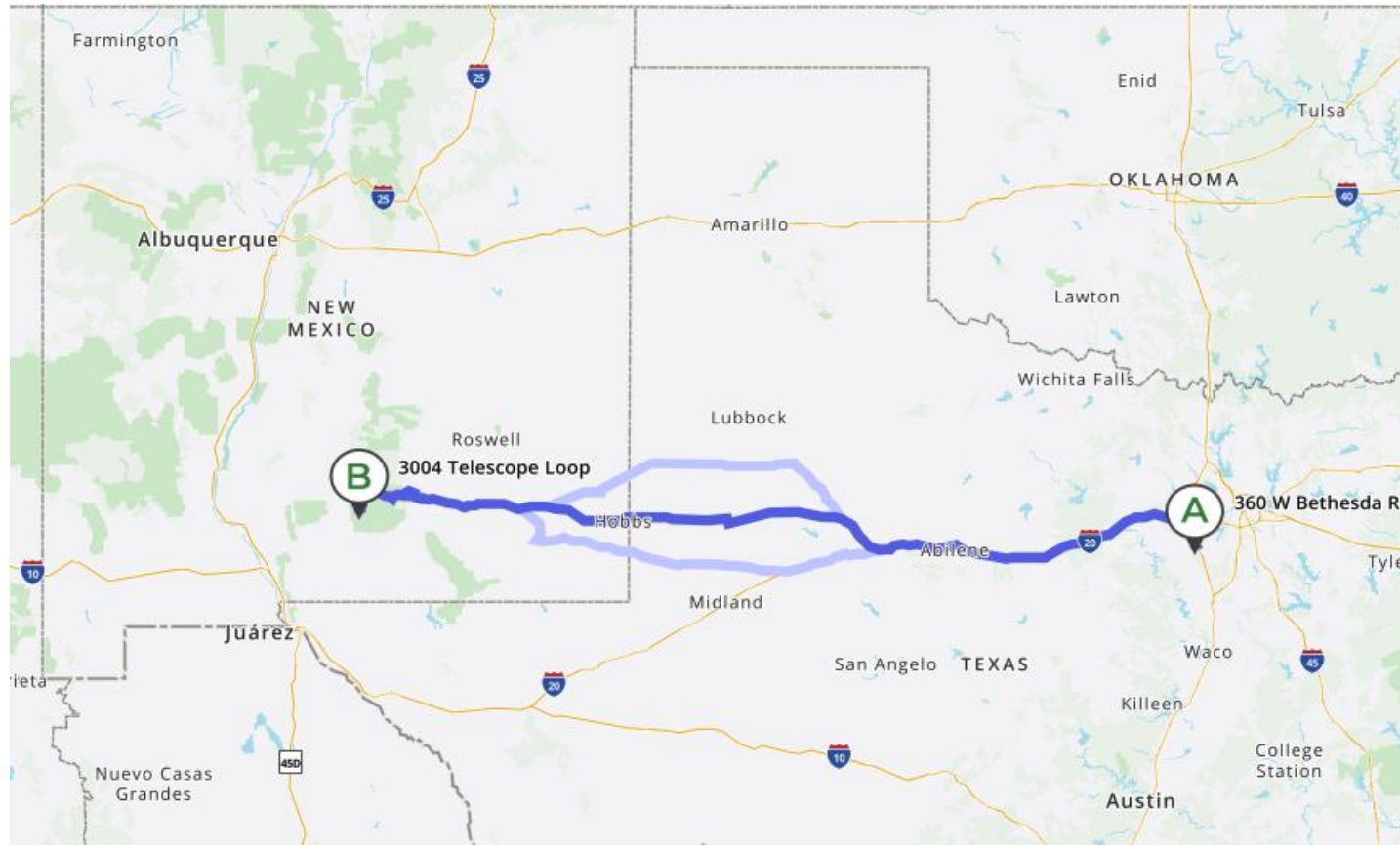
North Texas Microwave Society

Jim McMasters KM5PO
km5po@arrl.net

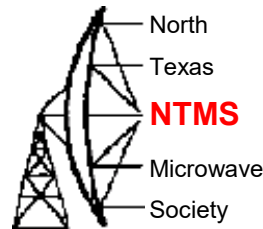
First Leg



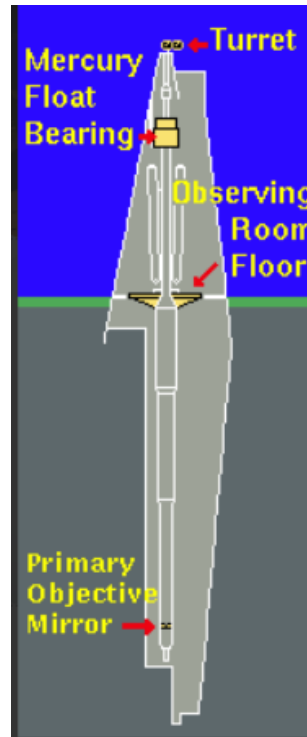
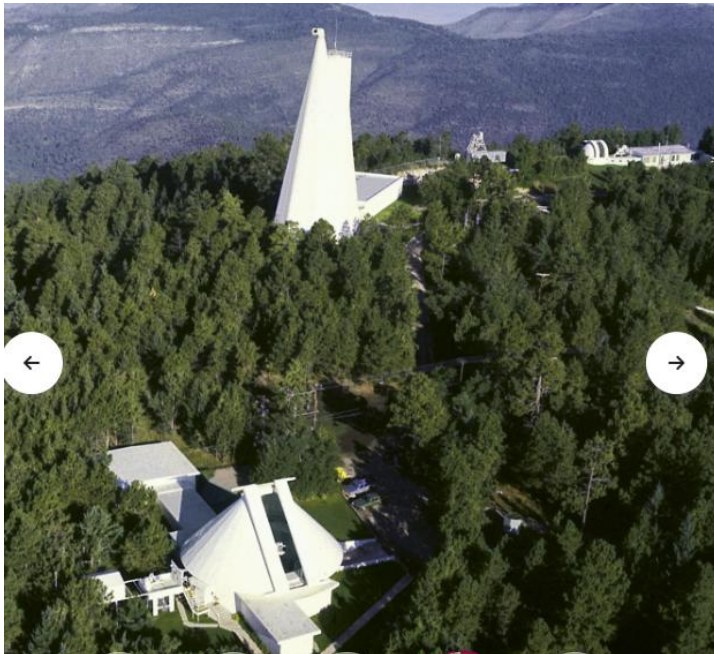
From Burleson to Sunspot Solar Observatory – 10 hours



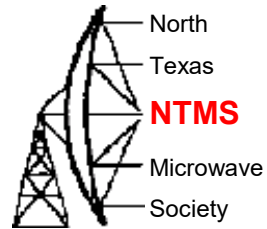
Sunspot Solar Observatory



Visitors area is a popular ham radio operating site. One of the clerks at the gift shop is married to KM5MB.



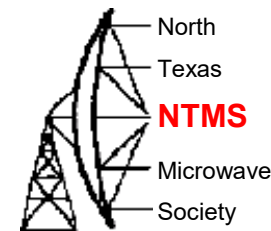
Sunspot Solar Observatory



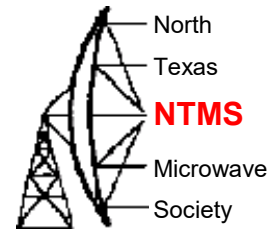
From parking lot / visitor center, a paved walkway (approx. 250 yards) leads up to the Scenic overlook deck. Handicap accessible.



Scenic observation area El Paso on left, Tularosa Basin on right. WSMR in center.



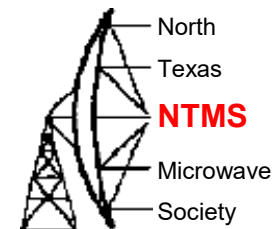
Ramp and upper sighting deck



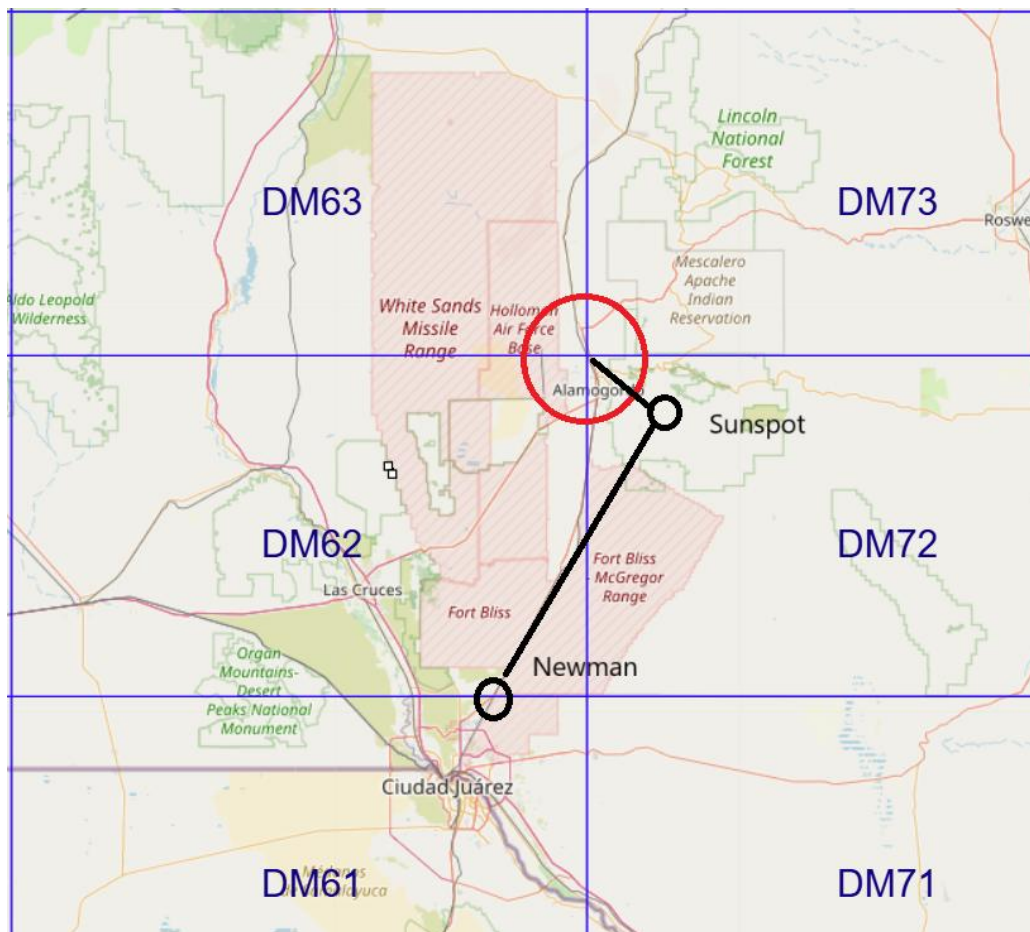
Three access spots



VUCC from Sunspot Obs



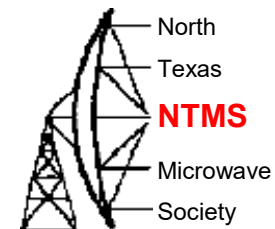
4 corners DM62 DM63 DM72 DM73 and DM61



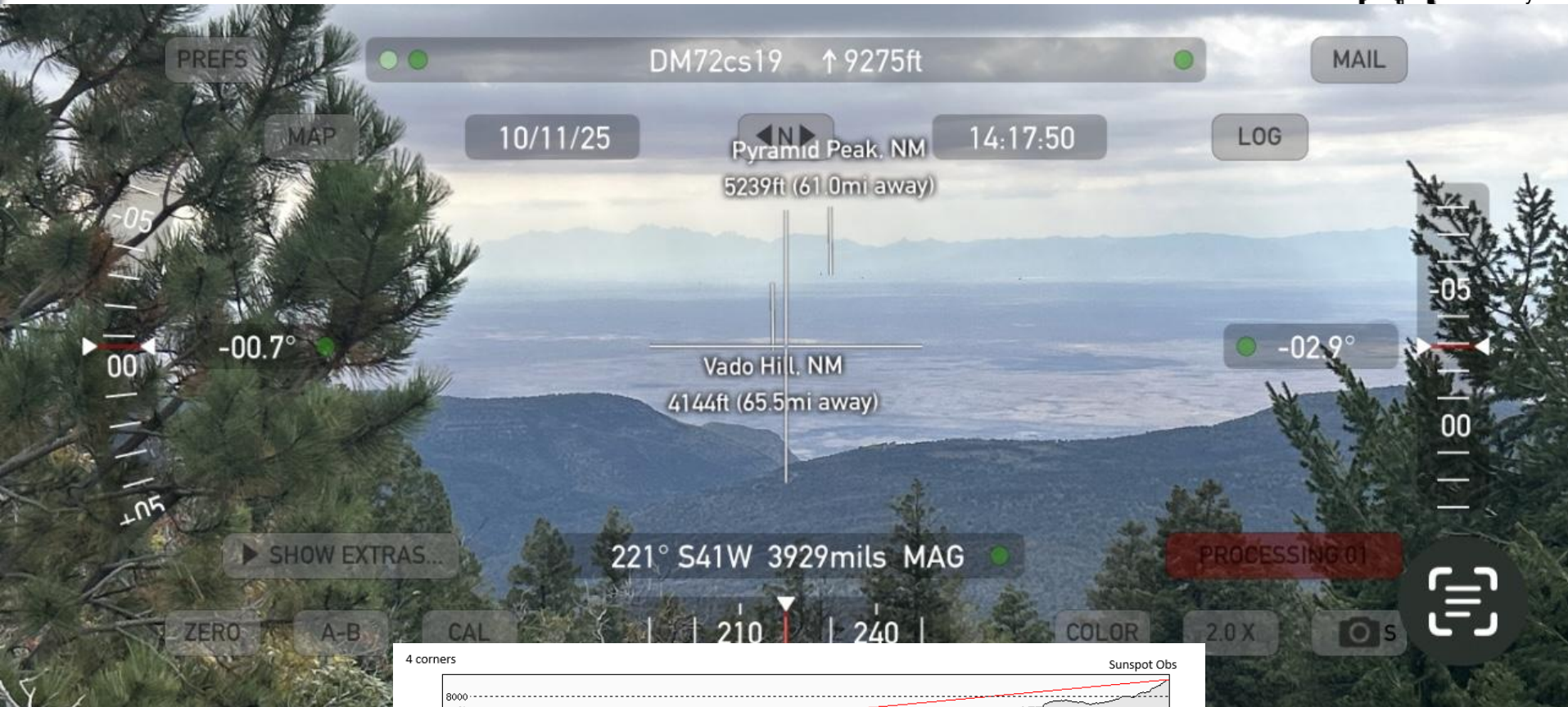
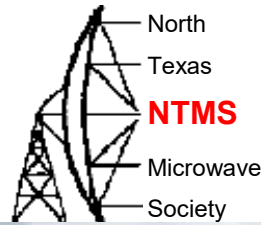
[Find your locator by exploring the map or by searching an address](#)

4 corners detail

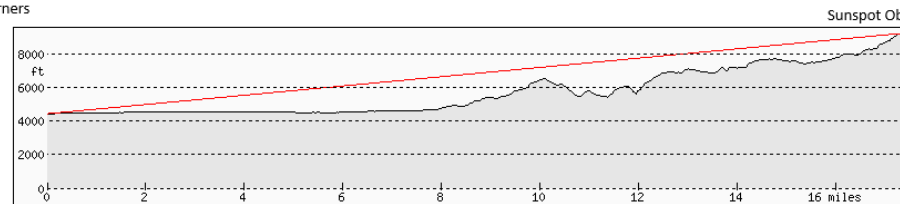
4 corners DM62 DM63 DM72 DM73



View to 4 corners is far right

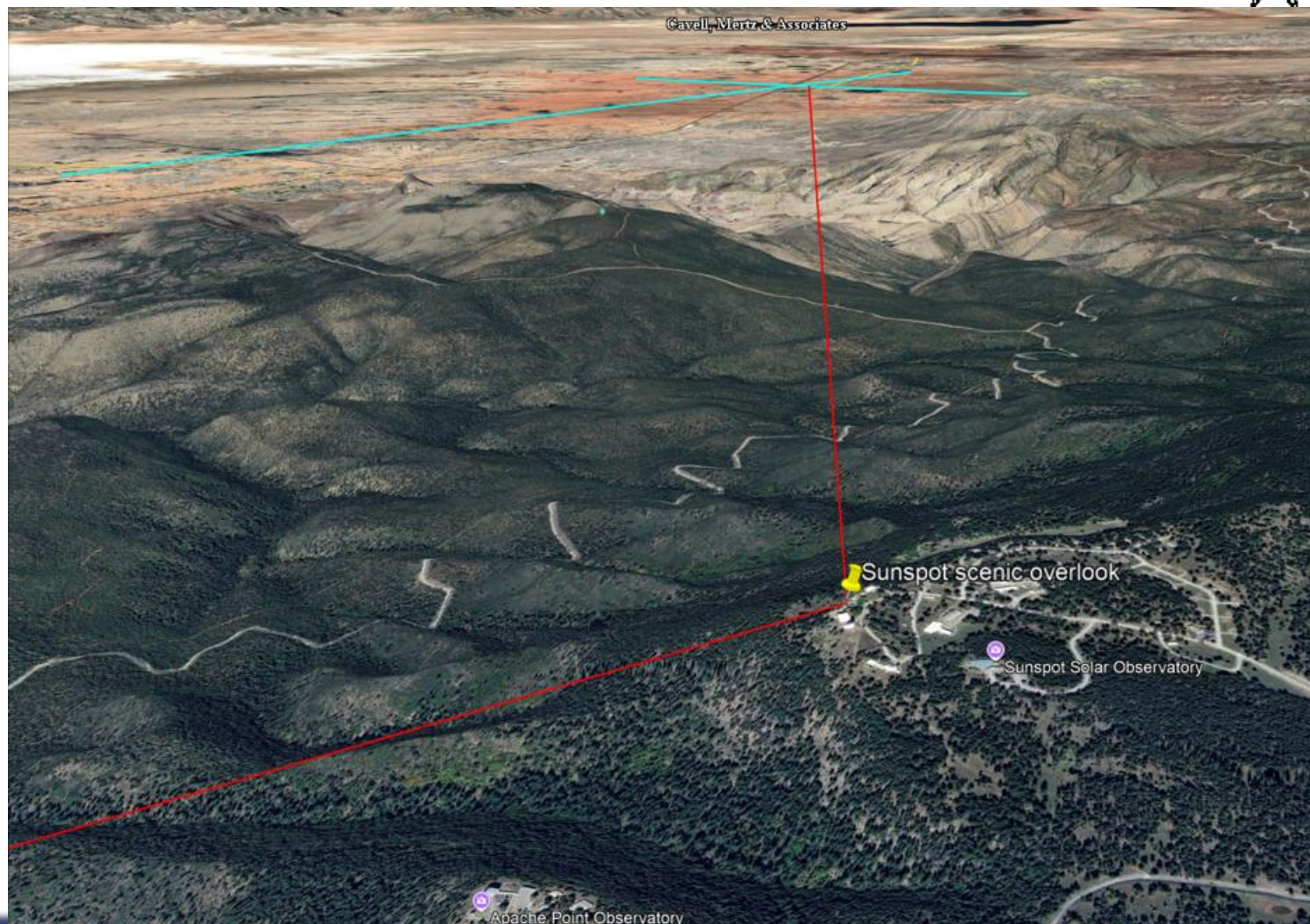
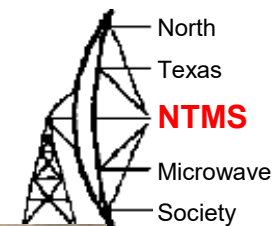


4 corners



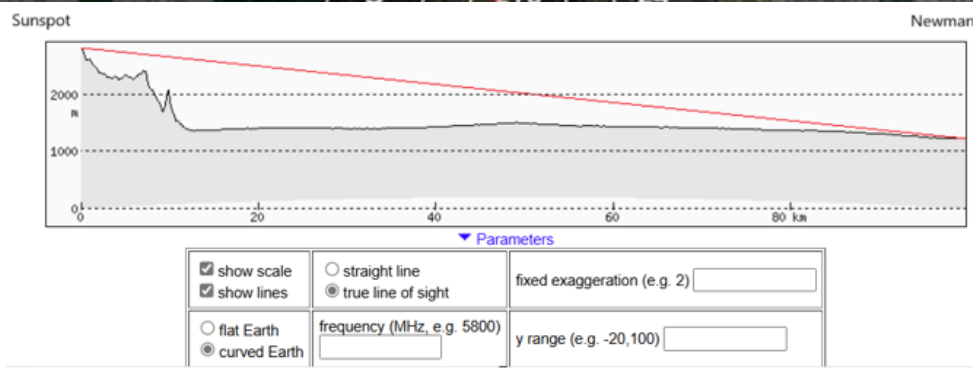
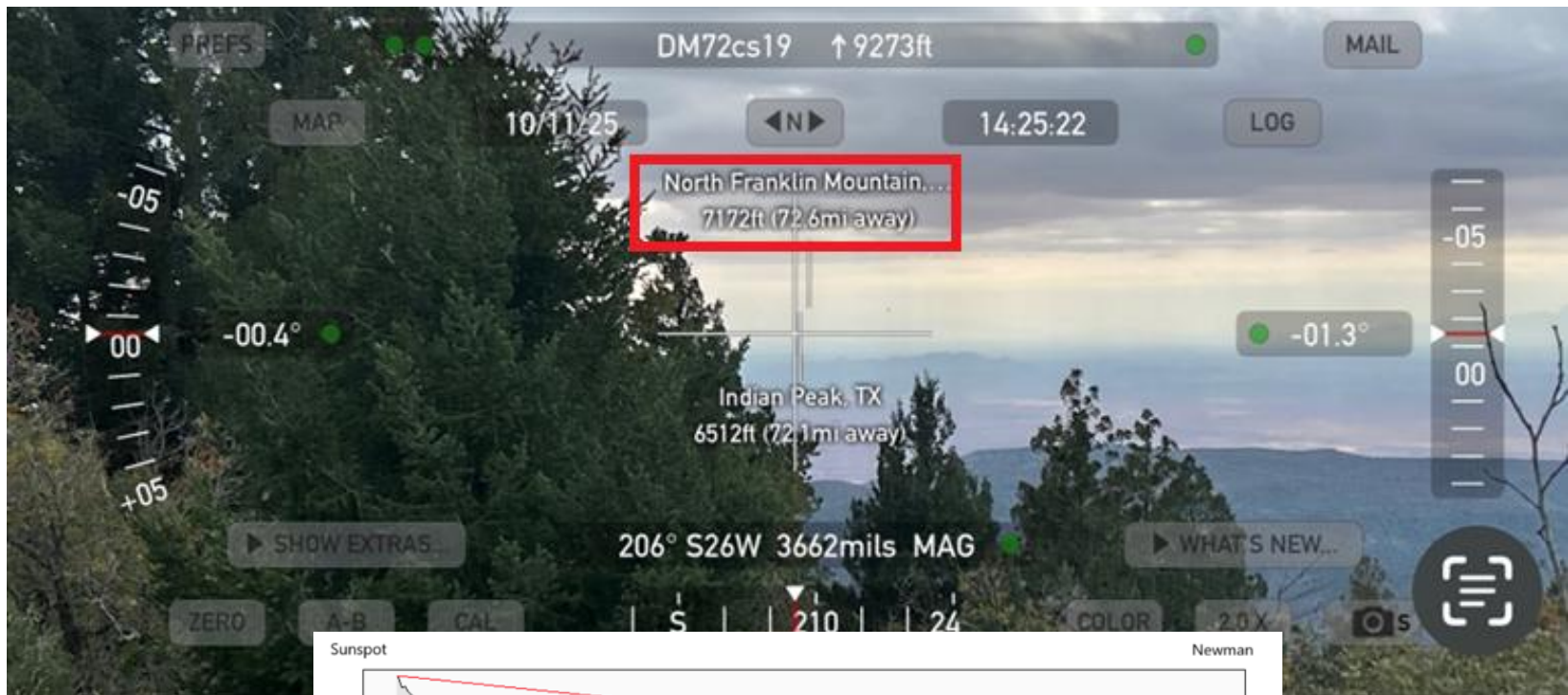
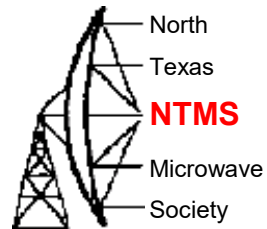
☒ show scale	☐ straight line	fixed exaggeration (e.g. 2)
☒ show lines	☒ true line of sight	
☐ flat Earth	frequency (MHz, e.g. 5800)	y range (e.g. -20,100)
☒ curved Earth		

Path to 4 corners



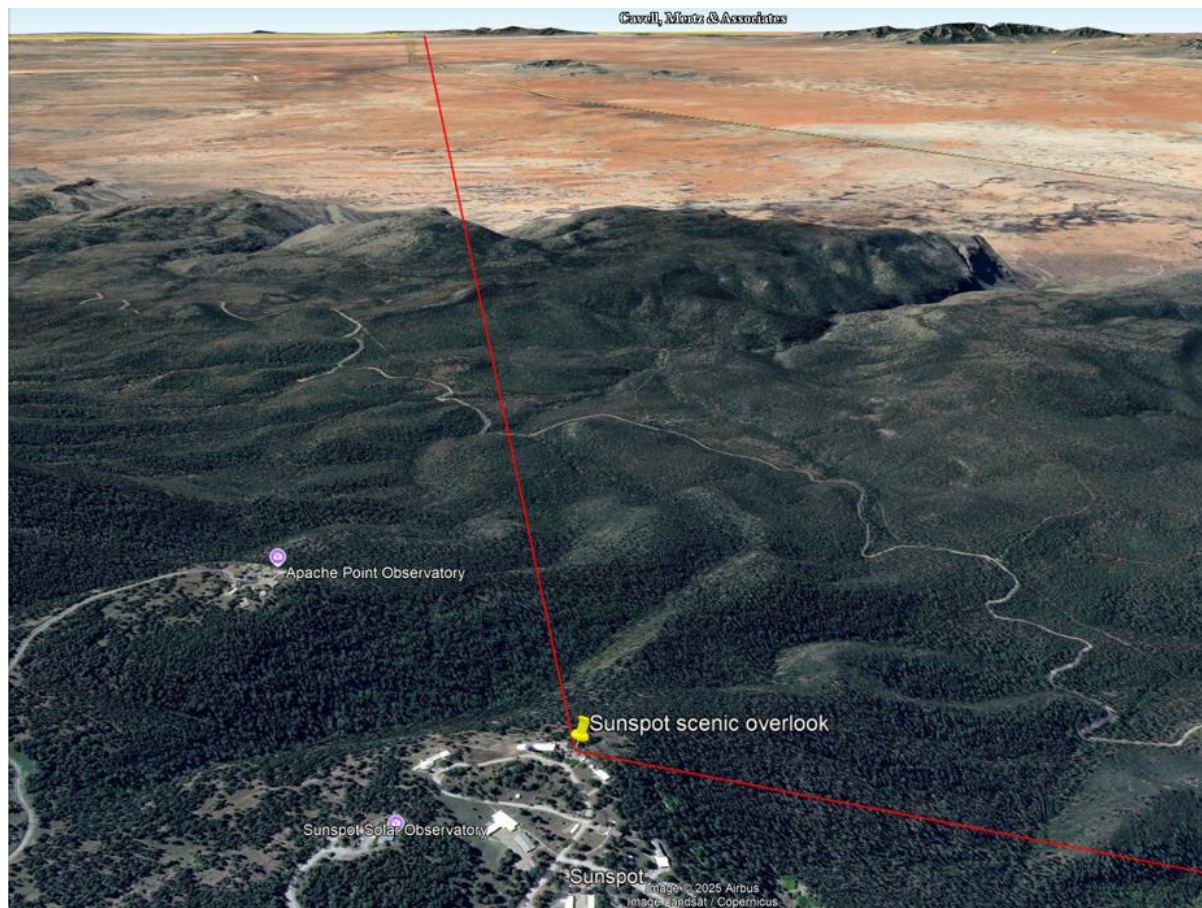
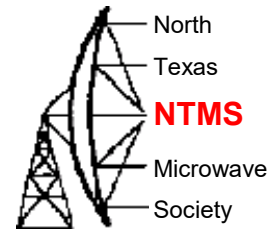
View to 5th Grid DM61

To DM61 Newman, Texas from Sunspot observation deck.

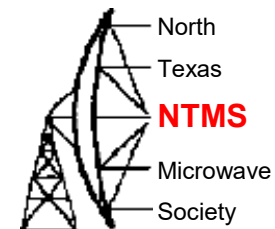


Path to Newman DM61 99.6 km

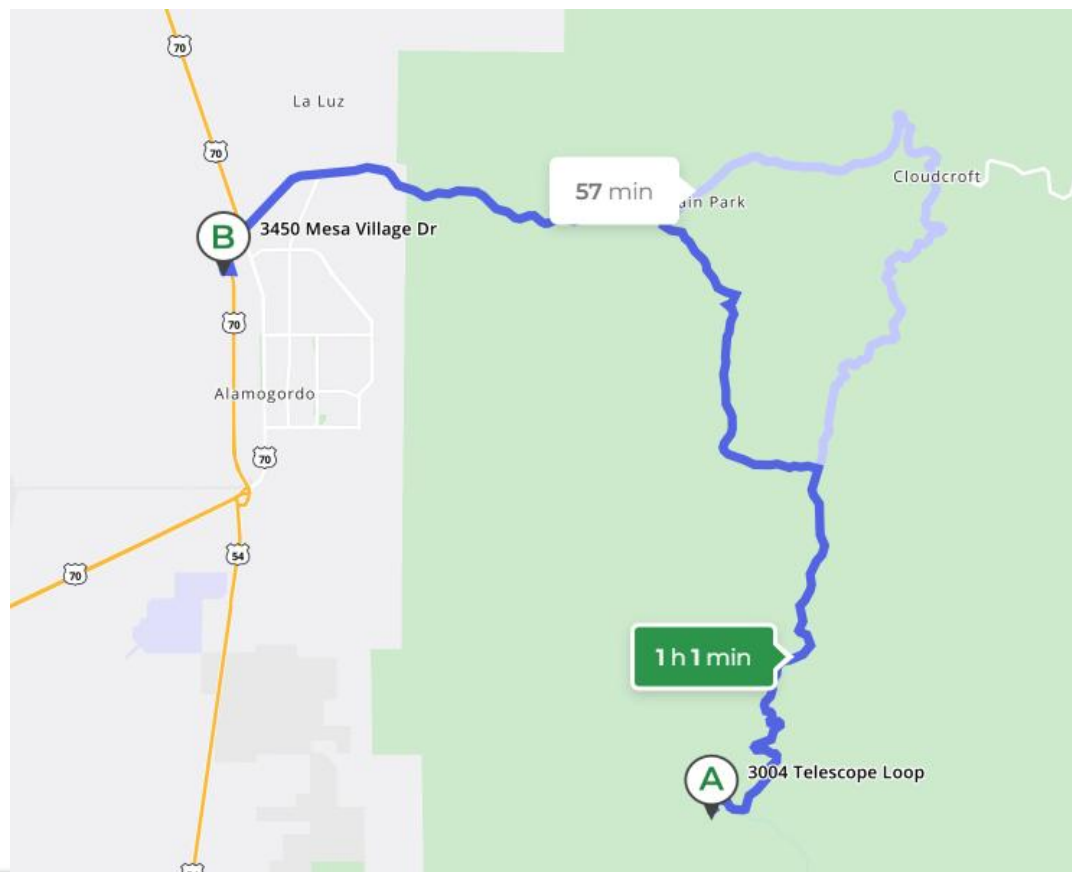
Newman Texas "Edge of Texas Road" DM61UX19AX



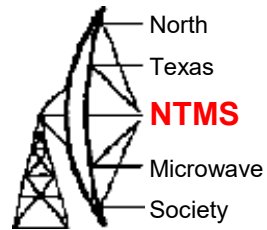
To Alamogordo from Sunspot Observatory



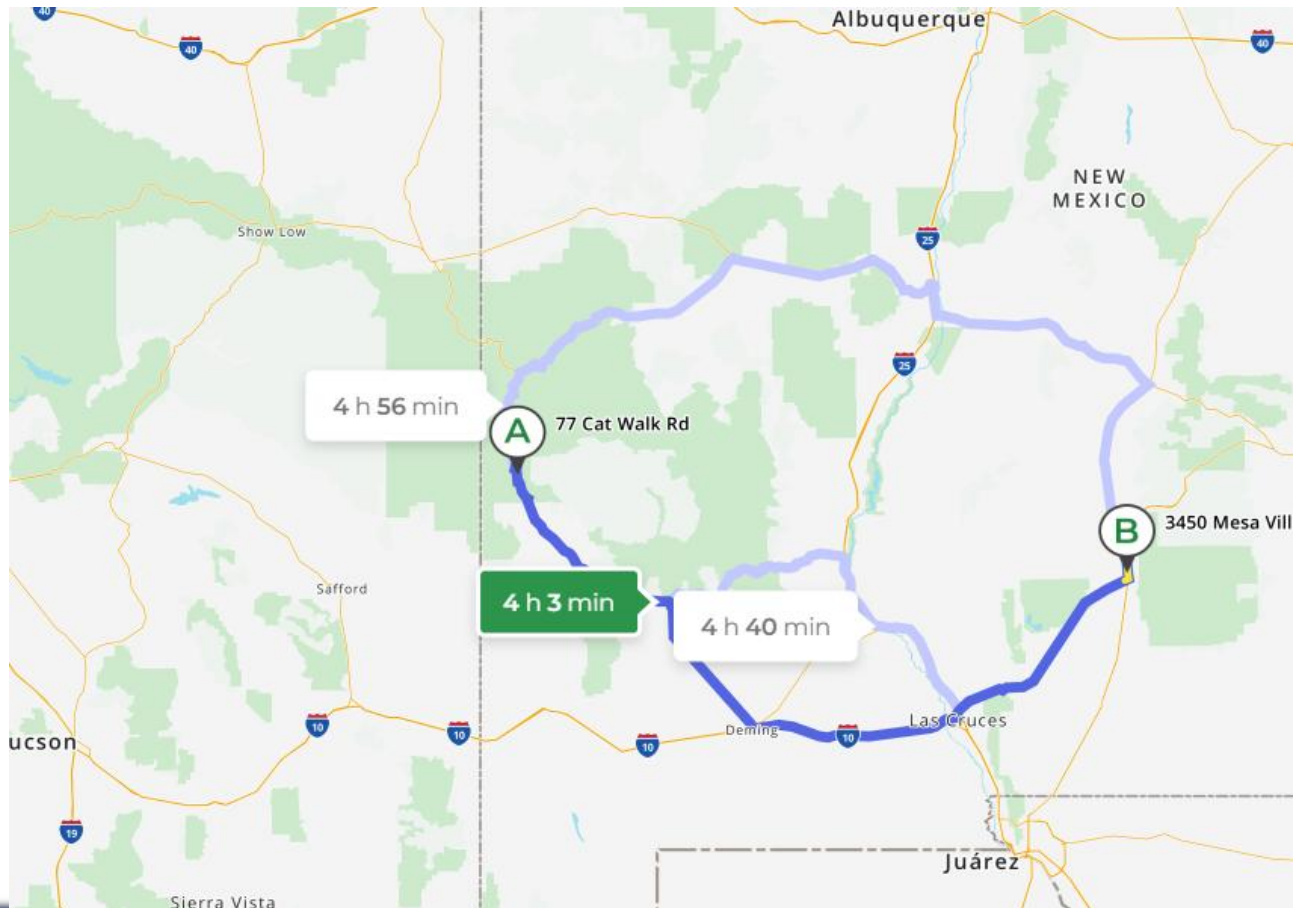
A short trip down memory lane (again).



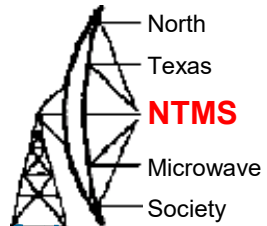
Leg 2 – Alamogordo to Glenwood



From Alamogordo to Glenwood, New Mexico – Cat Walk B & B.



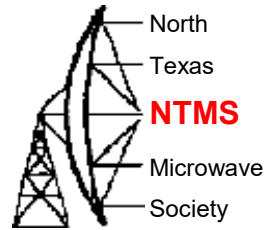
Leg 2 – Alamogordo to Glenwood



Alamogordo hotel room made me feel “at home” with a painting of the Organ Needle. The road through the Organ mountains to Las Cruces.



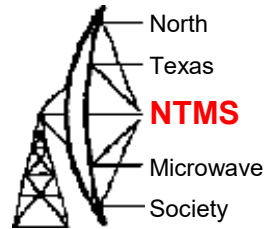
Leg 2 – Alamogordo to Glenwood



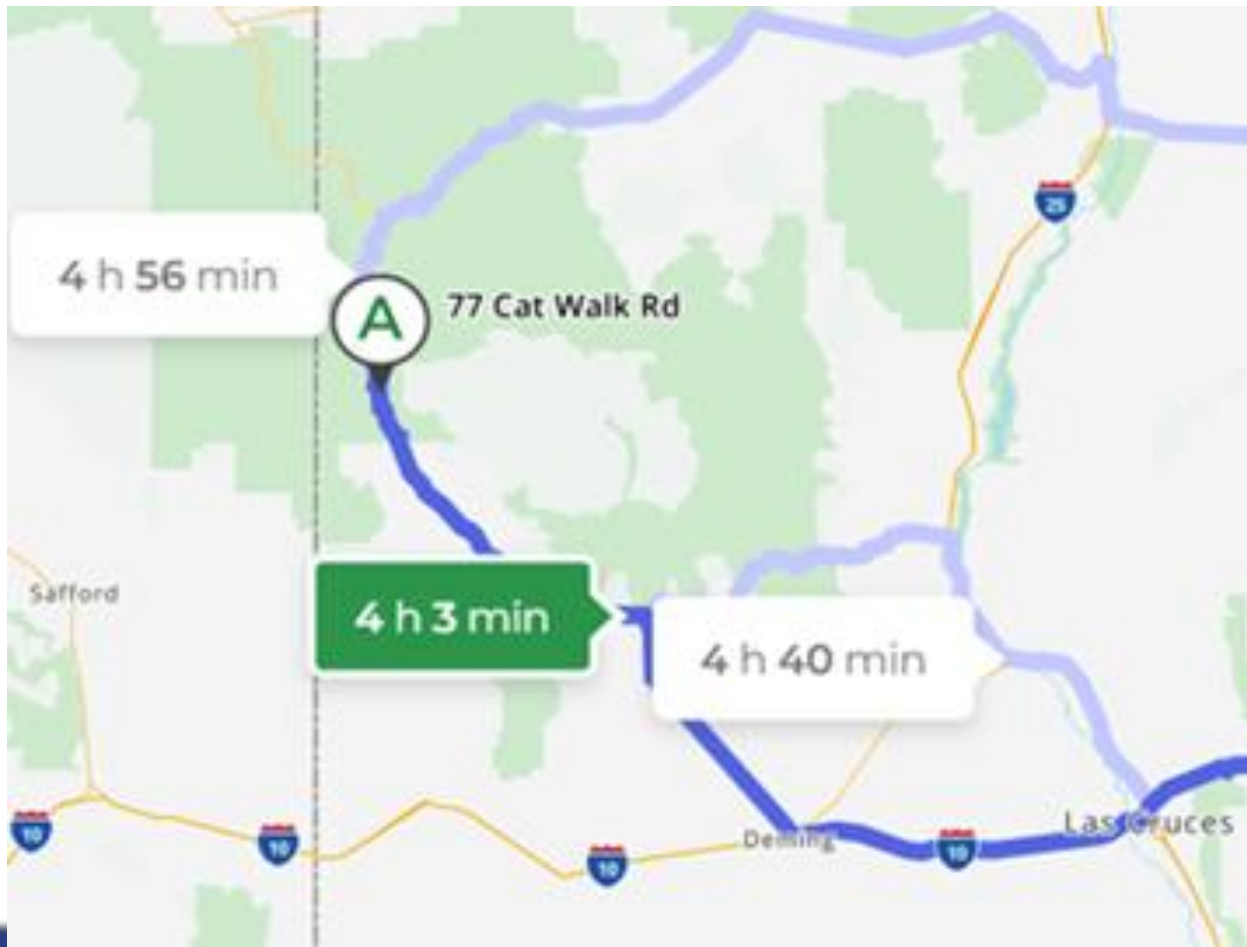
Obligatory stop for Border Patrol



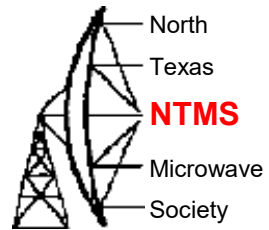
Leg 2 – no cell service



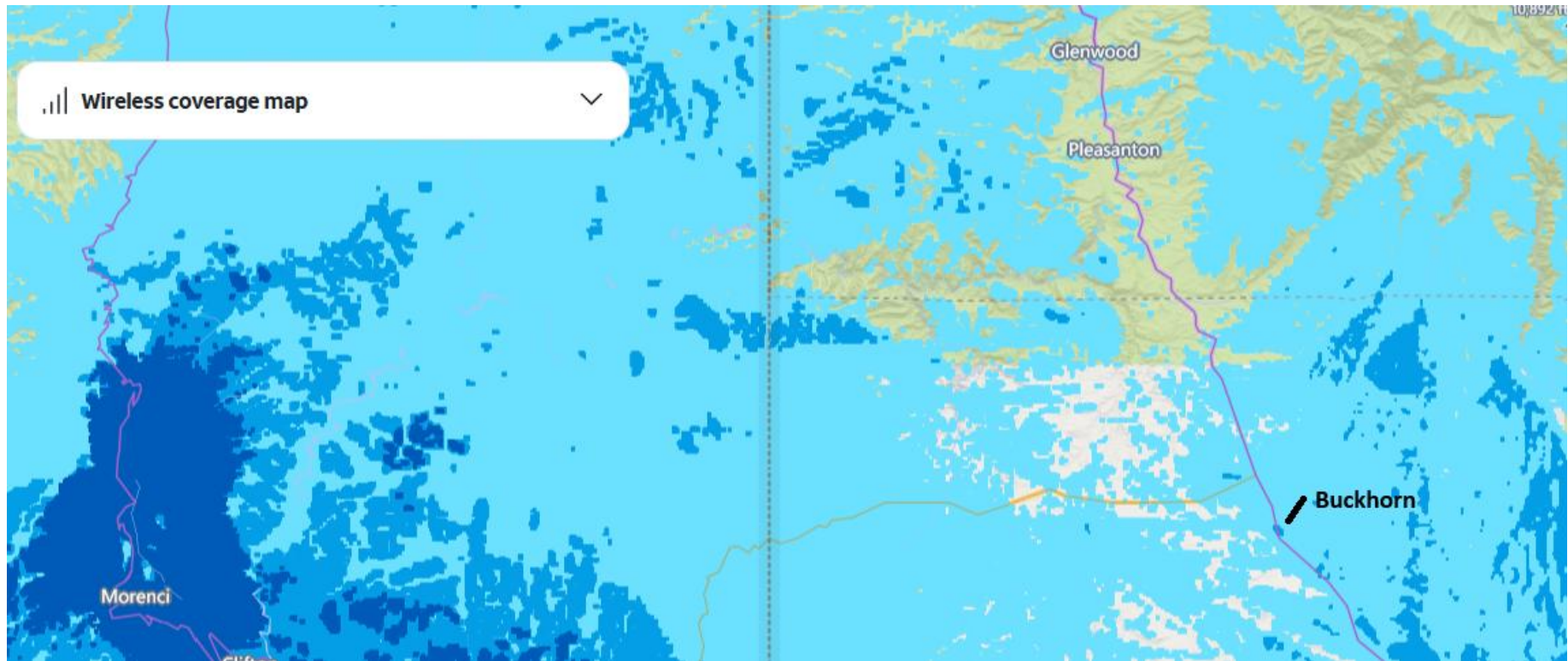
Dodging rain showers north of Silver City, New Mexico



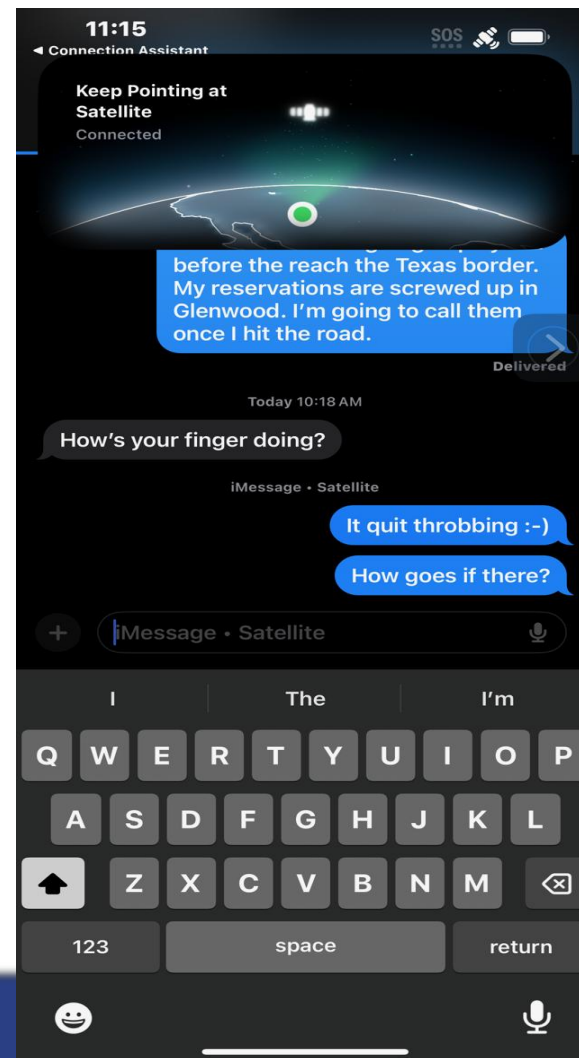
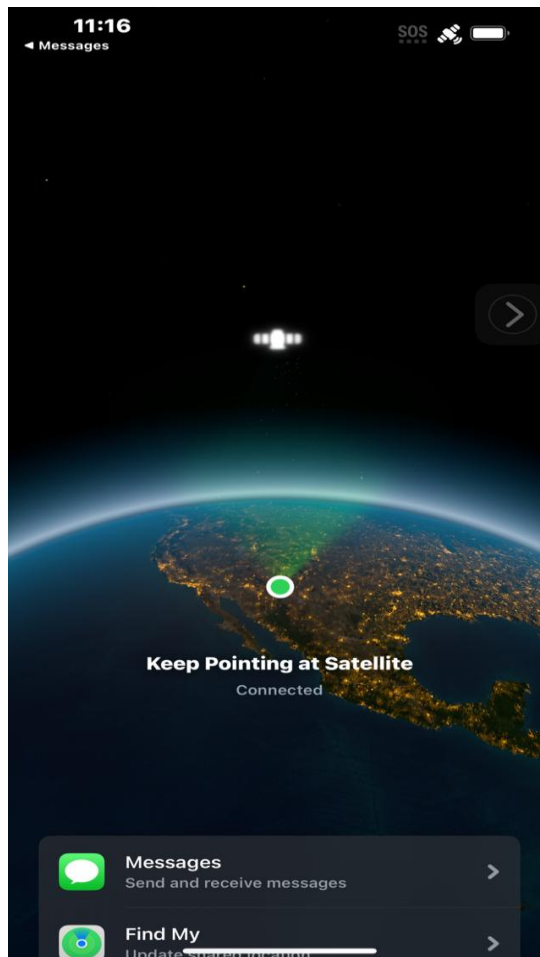
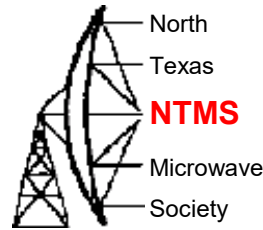
Leg 2 – no ATT coverage!



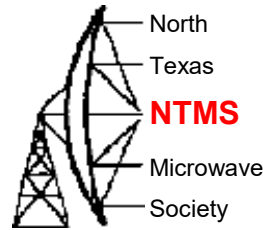
Buckhorn New Mexico, one bar of LTE service!



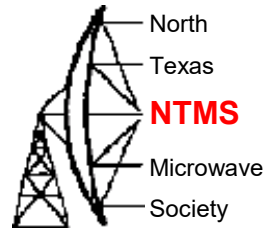
Leg 2 – let's play with LEOs! (the ATT solution to no service)



Leg 2 – hold up in the cabin while the rain storms pass



Whitewater creek

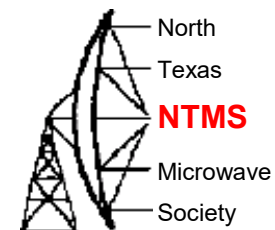


The Cat Walk – suspended walkway over the Whitewater creek below.

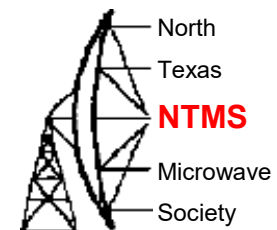


The end of the Cat Walk

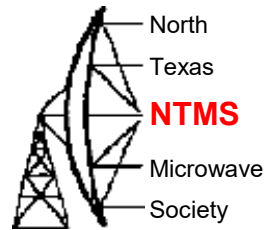
The last time I was here was exactly 51 years ago



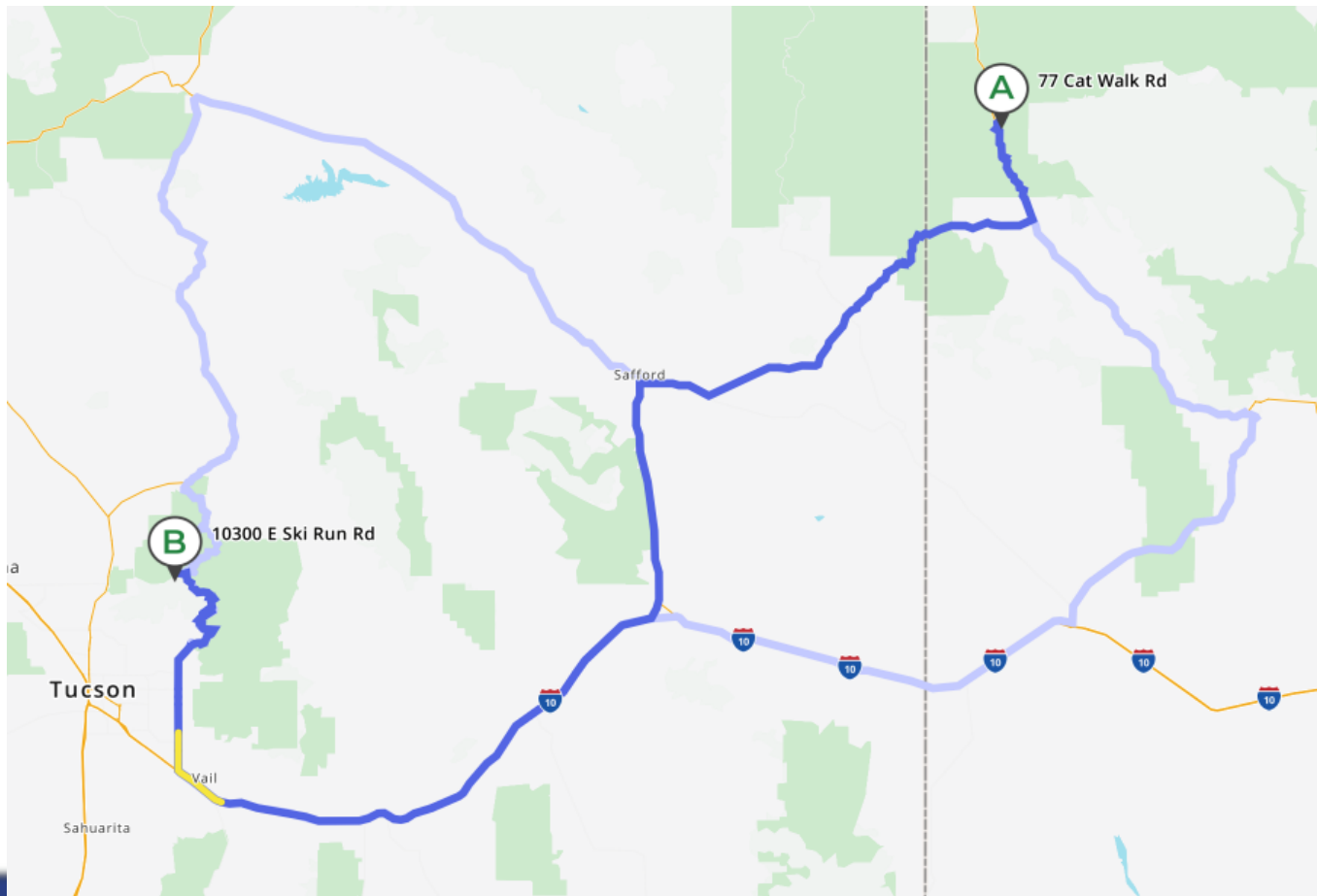
Typical washed out road crossing



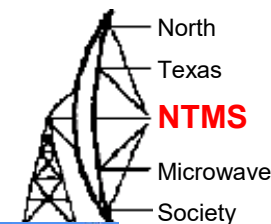
Leg 3 – Glenwood NM to Mt Lemmon



Depart 3 am, arrive Mt Lemmon at 9:30 am. Set up rover rig!

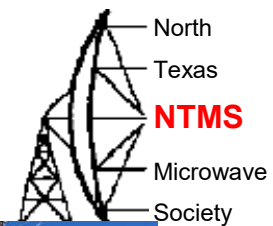


Day 1 Mount Lemmon

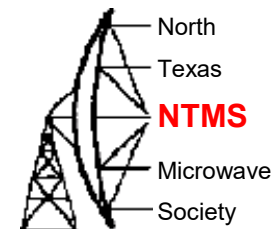


Mount Lemmon VUCC participants working Al Ward W5LUA in Maricopa AZ
Brian W6BY, Oliver, KB6BA, Tony, K8ZR, Joel, KD6W, Jim KM5PO

Day 1 Mount Lemmon



Day 1 Mount Lemmon

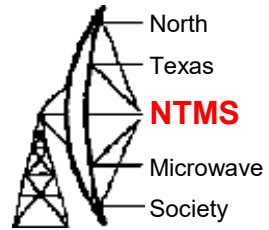


Tony K8ZR working Al Ward on 10/24/47/78 GHz!

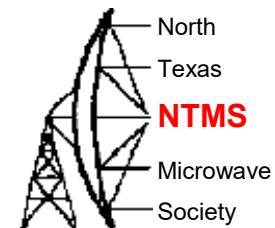


Day 1 Mount Lemmon

Drying out all the stuff in my toolbox
from driving through the rain

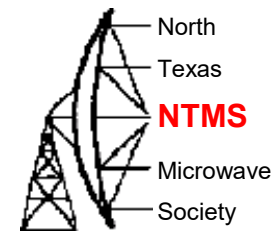


Day 2 Mount Lemmon



The weather was nice. We had many visitors that stopped to ask questions

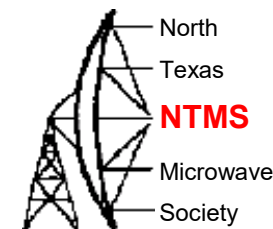
Day 2 Mount Lemmon looking to work Al Ward at EM52bp



Joel far left, Tony/Jim middle, Oliver and Paul + Chris / Holly



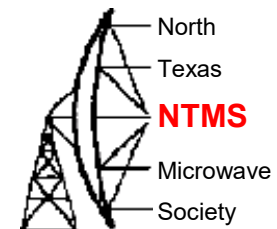
Pointing to AI in DM52bp



AI W5LUA is exactly where the red dot is placed.

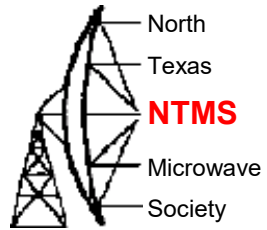
Mount Lemmon drive

Thimble peak



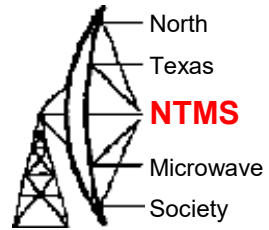
Mount Lemmon drive

Higher elevation



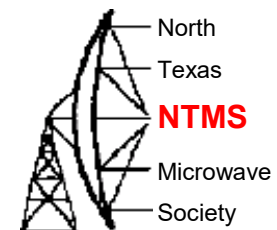
Mount Lemmon drive

20 mph curves



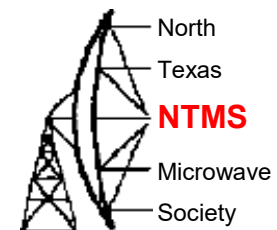
Mount Lemmon drive

Lower elevation

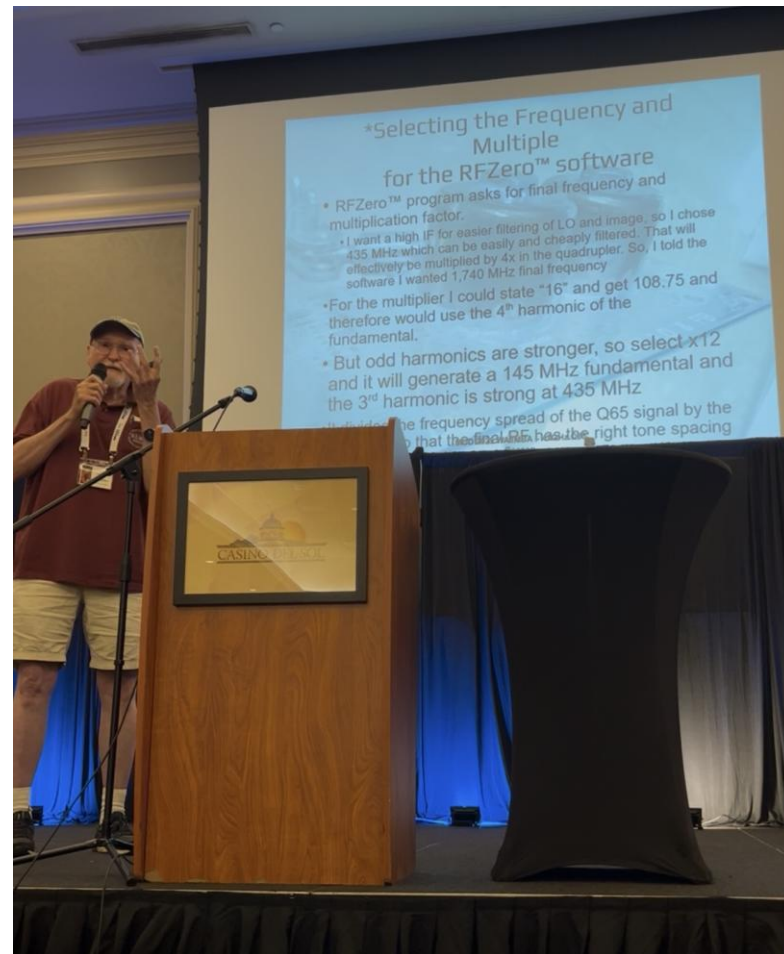
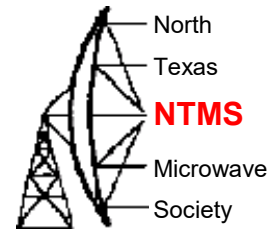


Mount Lemmon drive

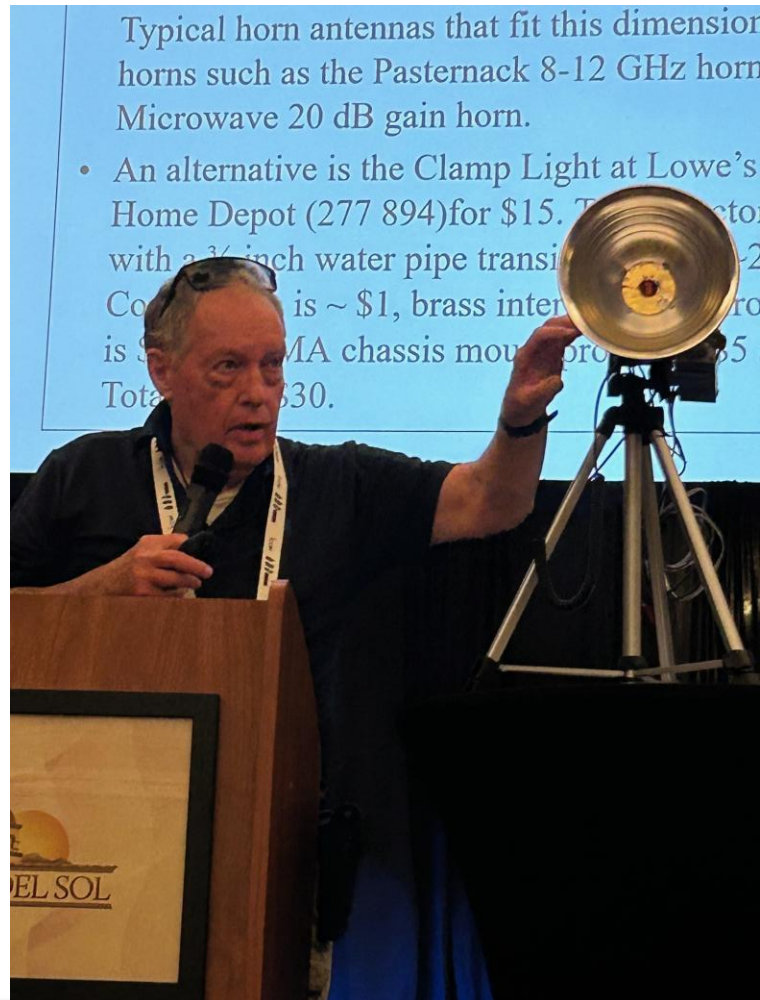
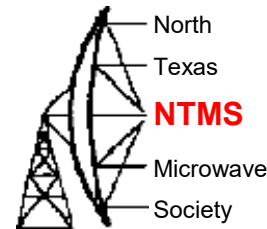
Lower elevation



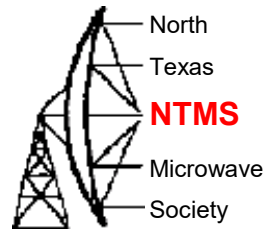
Microwave Update – Casino Del Sol, Tucson AZ



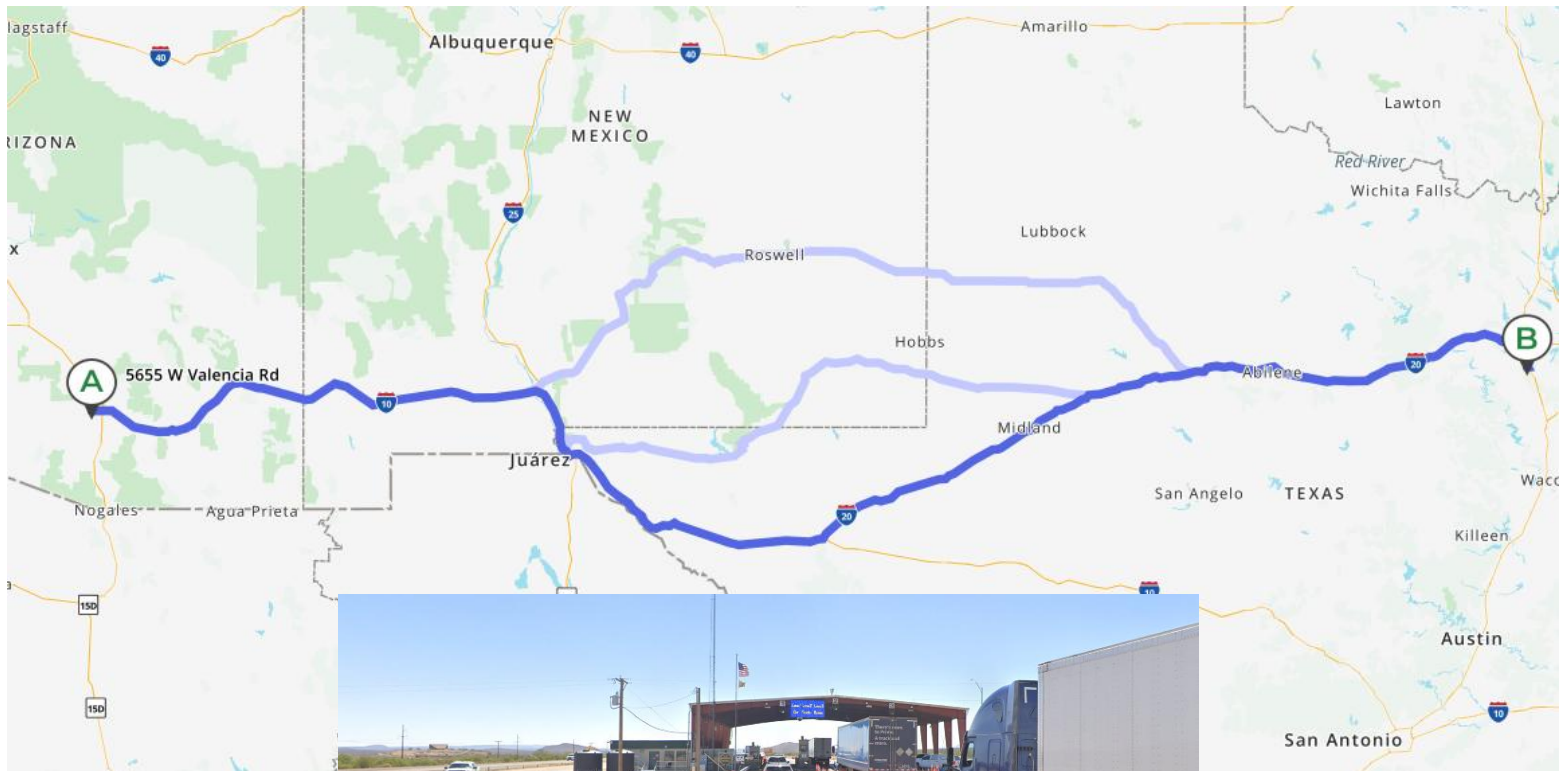
Microwave Update – Casino Del Sol, Tucson AZ



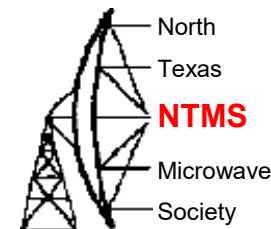
The return home



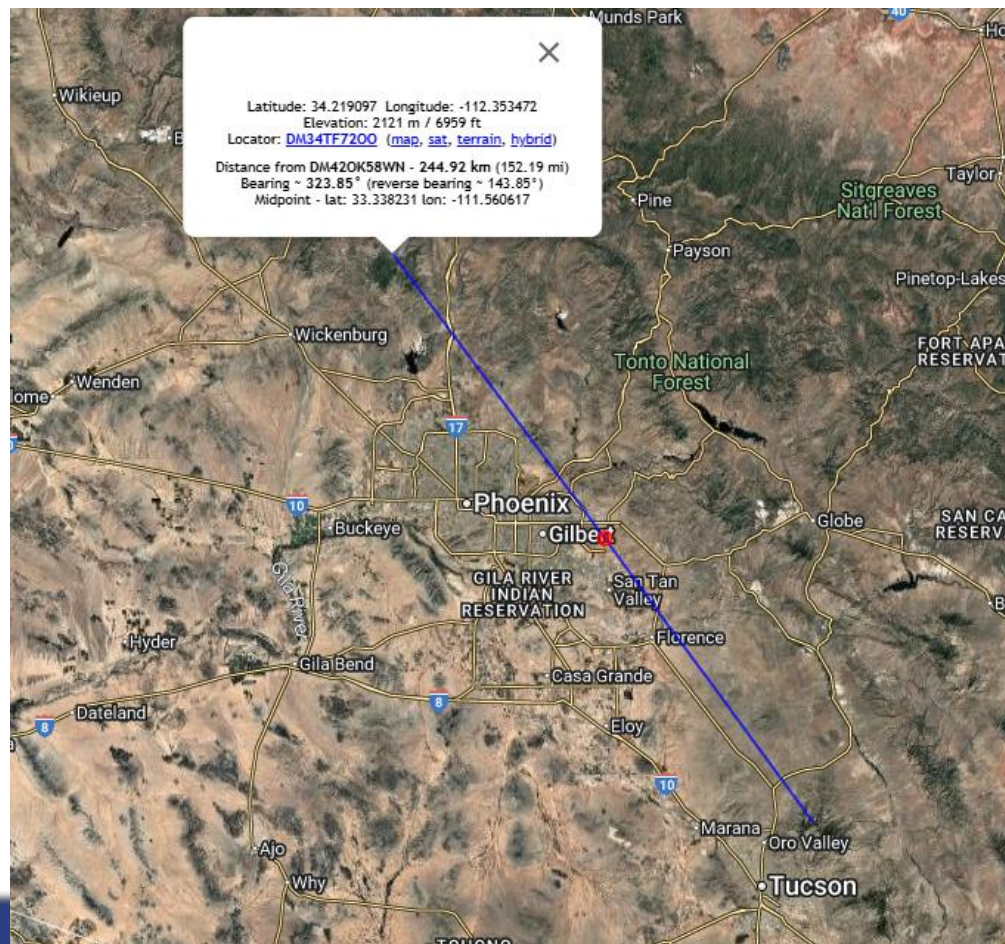
15 hour drive time



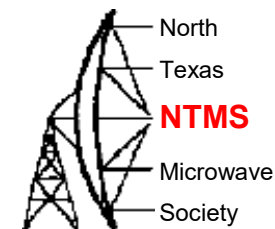
Other possibilities



I sent email to Joel, KD6W inquiring if rovers in AZ have considered Crown King and other locations farther to the North



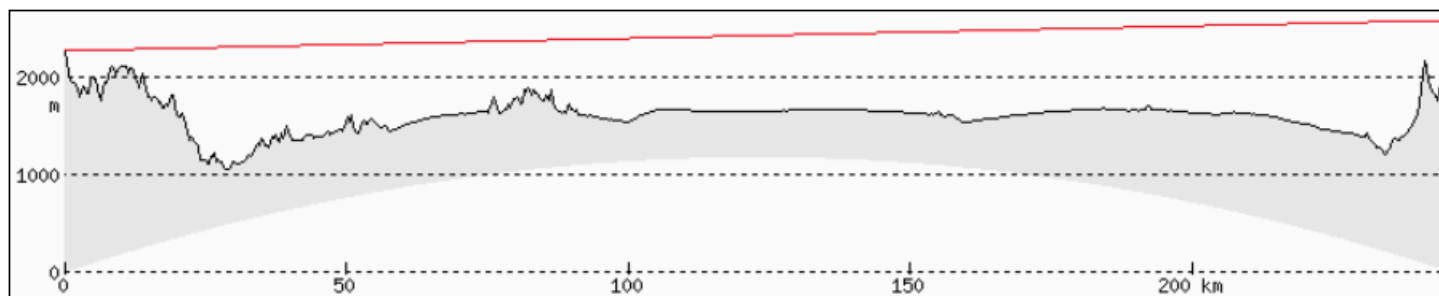
Crown King area



Clearly line of sight with Link budget numbers that could work

Crown King area DM34TF74TH

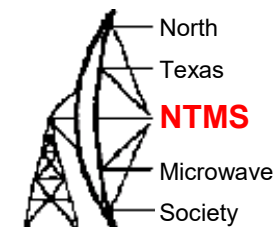
Mt Lemmon DM42OK



Parameters

☒ show scale ☒ show lines	☐ straight line ☒ true line of sight	fixed exaggeration (e.g. 2)
☐ flat Earth ☒ curved Earth	frequency (MHz, e.g. 5800)	y range (e.g. -20,100)
☐ plate carée ☒ great circle	refraction (e.g. .14)	Reset

Link budget 250 km – 47 GHz



CALCULATE TOTAL PATH LOSS AND RECEIVED SIGNAL STRENGTH

Frequency: GHz 0.1 to 300
 Distance: km 0.1 to 1000
 Temperature: °C -50 to 50
 Rel Humidity: % 0 to 99.9
 Barometer: hPa 500 to 1200
 Altitude Adjust: m 0 to 5000

USE WEATHER READ

TX Power: dbm -60 to 60
 TX Ant. Gain: dbi 0 to 70
 RX Noise Figure: db 0 to 50
 RX Bandwidth: Hz 10 to 5000
 RX Ant. Gain: dbi 0 to 70

Calculate

FS Path Loss: db
 Gas Loss: db
 Total Loss: db
 Dew Point: °C
 Abs. Humidity: g/m3
 Adj. Barometer: hPa

TX EIRP: dbm
 Received Signal: dbm
 RX S/N Ratio: db

Best Path Distance for:

15db S/N Ratio: km
 10db S/N Ratio: km
 5db S/N Ratio: km
 0db S/N Ratio: km
 -10db S/N Ratio: km
 -20db S/N Ratio: km

CALCULATE TOTAL PATH LOSS AND RECEIVED SIGNAL STRENGTH

Frequency: GHz 0.1 to 300
 Distance: km 0.1 to 1000
 Temperature: °C -50 to 50
 Rel Humidity: % 0 to 99.9
 Barometer: hPa 500 to 1200
 Altitude Adjust: m 0 to 5000

USE WEATHER READ

TX Power: dbm -60 to 60
 TX Ant. Gain: dbi 0 to 70
 RX Noise Figure: db 0 to 50
 RX Bandwidth: Hz 10 to 5000
 RX Ant. Gain: dbi 0 to 70

Calculate

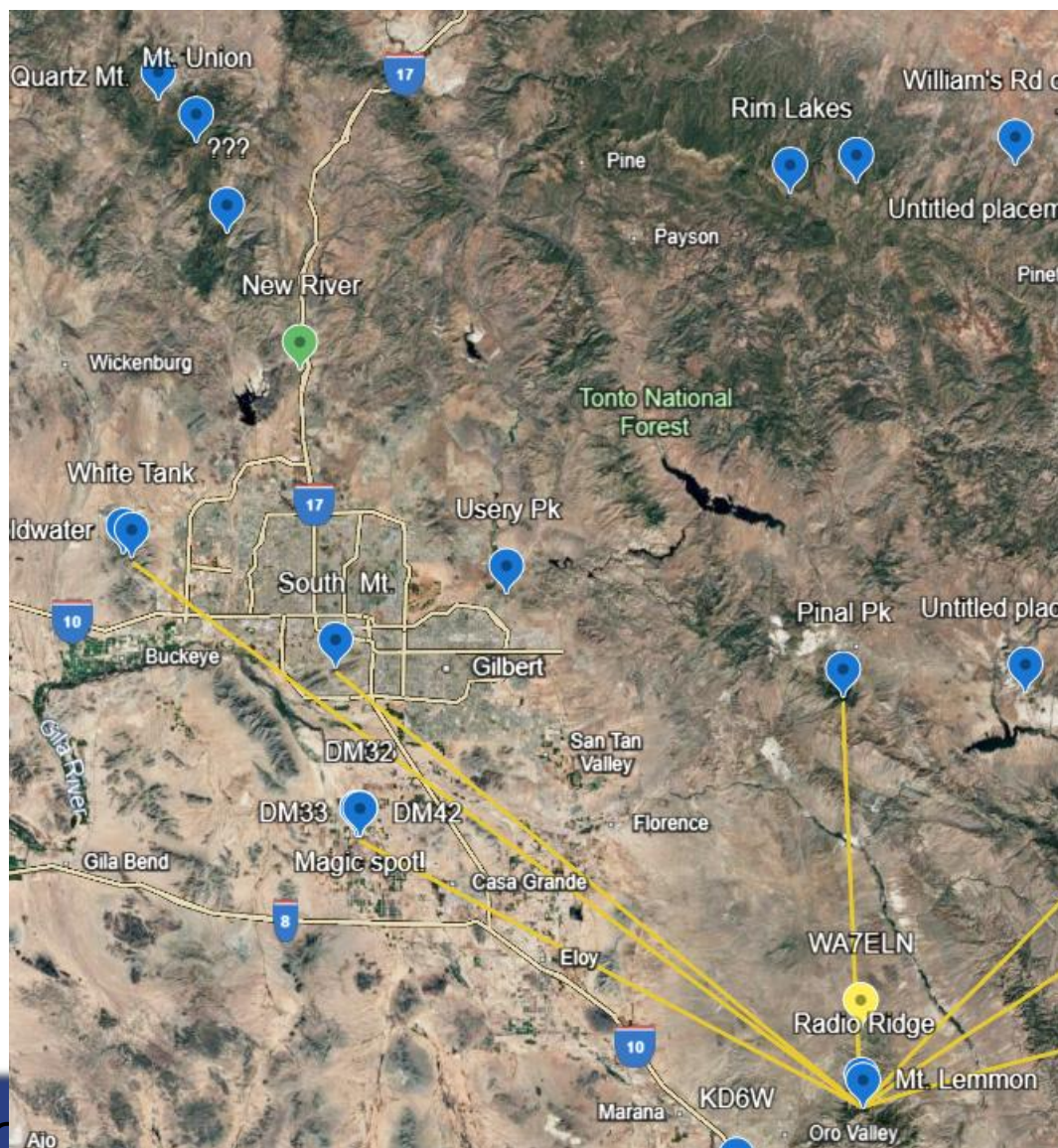
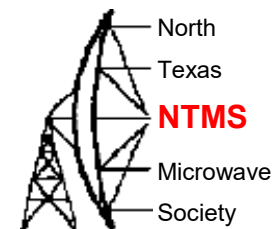
FS Path Loss: db
 Gas Loss: db
 Total Loss: db
 Dew Point: °C
 Abs. Humidity: g/m3
 Adj. Barometer: hPa

TX EIRP: dbm
 Received Signal: dbm
 RX S/N Ratio: db

Best Path Distance for:

15db S/N Ratio: km
 10db S/N Ratio: km
 5db S/N Ratio: km
 0db S/N Ratio: km
 -10db S/N Ratio: km
 -20db S/N Ratio: km

From Joel KD6W



Questions?

