

June 2018 Coast-to-Coast Grid Expedition

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Pacific Northwest VHF Society
10/13/2018

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This presentation was presented at the PNWVHFS Conference on Oct 12-13, 2018 in Seaside, Oregon.

Visual aids:

- HEMA Road Atlas
- One-page US map
- 3-ring trip binder
- Compass rose
- USB dongle for GPS
- Lapdome
- Laser pointer

Technicians – You can do this!

- ▶ Technician Class: all ham radio privileges above 30 MHz
- ▶ All modes, all frequencies, any power level
- ▶ FM, AM, SSB, CW, APRS, Digital modes – you can do it all
- ▶ You can do everything you see on this trip

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Technician Class license is the most amazing ticket.

You can do everything that Extra Class can do! (Above 30 MHz)

Pop quiz - Show of hands:

- Technician Class?
- Used SSB on any band?
- Used SSB on 6 meters?
- Run WSJT digital modes on any band?
- Familiar with grid squares?
- What grid are we in right now? (Seattle CN87, Seaside CN85)
- How big is CN87? (100 miles e-w, 70 miles n-s)
- What grid is to the North? (CN88 or CN86)
- What grid is to the East? (CN97 or CN95)

Above 30 MHz you're all the same.

Intro

- ▶ 7,800 miles and 4 weeks condensed into 40 minutes
- ▶ Is this a Travelogue?
- ▶ Is this a How-to?
- ▶ A little of both
- ▶ Lessons learned

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Actually 7,800 miles and 3 ½ weeks

There are two general ways to document or present a trip: travelogue or how-to
I'm jumping around with both types.

Any good travel show must answer the question: "What's it like?"

About K7BWH

- ▶ Licensed in 1968
- ▶ General class
- ▶ EE degree from WSU
- ▶ Off the air 1980 – 2010
- ▶ Pacific Northwest VHF Society director and webmaster
- ▶ Have activated:
 - all 18 grids in WA
 - all 22 grids in OR
 - half of 20 grids in ID

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In 2010, when our last child went off to college, my wife said I needed a hobby. I knew exactly I wanted after 30 years off the air.

Who Do I Talk To?

- ▶ VHF Grid chasers
 - People chase “VUCC” = VHF/UHF Century Club
 - People chase “FFMA” = Fred Fish Memorial Award
 - All on 6 meters
- ▶ “Reverse VUCC” would be fun
 - **Activate** 100 grid squares

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FFMA is the pinnacle award for truly crazy VHF hams.

Work all 488 grid squares in the contiguous 48 states on 6 meters.

Only seven people have earned it. Typically takes 30-40 years.

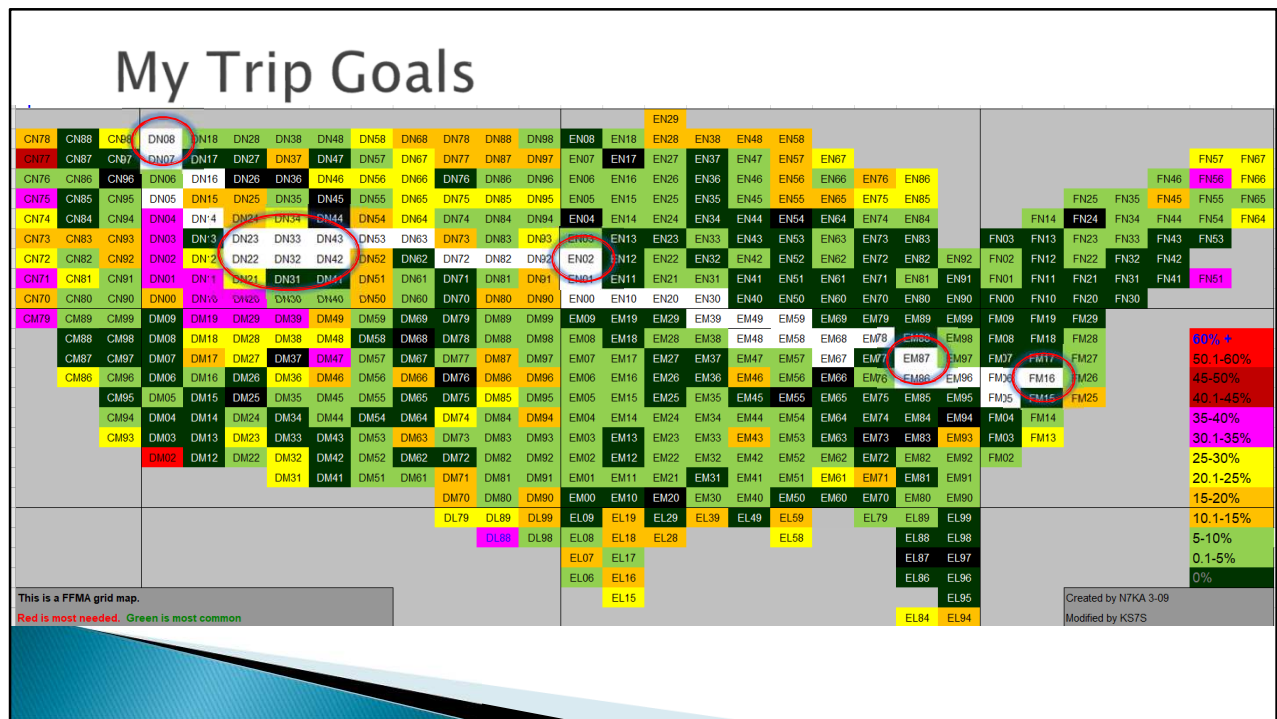
- #3 Rick Roderick K5UR in Arkansas, ARRL Pres.
- #6 Larry Lambert N0LL in Kansas
- #7 Lance Collister W7GJ in Montana

Some people are close:

- Joe Fleagle W0FY in Missouri needs 2
- Bill ND0B in North Dakota needs 2
- Several PNW hams: Mark W7MEM (7?), Paul K7CW (13?), K7MAC (25?), K7MCX (29?), Hal N7NW (56?), Tom KE7SW (75?)

“Reverse VUCC” is activating 100 or more grids. Awards offered by Central States VHF Society.

Imagine a fixed station collecting grids on a certain band. If one Rover is the station who activates the grids for him, each operator made identical contacts. But who worked harder?



Can't justify 8,000 miles with only just a single reason

- Activate DN08 Okanagon for Joe W0FY
- Activate DN16 Palouse for Jim K7ND, Tom KE7SW
- Activate Idaho grids for my Lewis & Clark goal
- Activate EN02 Nebraska for several PNW hams
- Activate EM87 Kentucky for several PNW hams
- Activate *lots* of grids for VUCC/r
- Oh yeah, and carry things to/from family on North Carolina coast

DN08: I've been there before but was rushed in contest.

DN08 is among the rarest grids.

Joe Fleagle W0FY needs it as one of his last two grids toward FFMA.

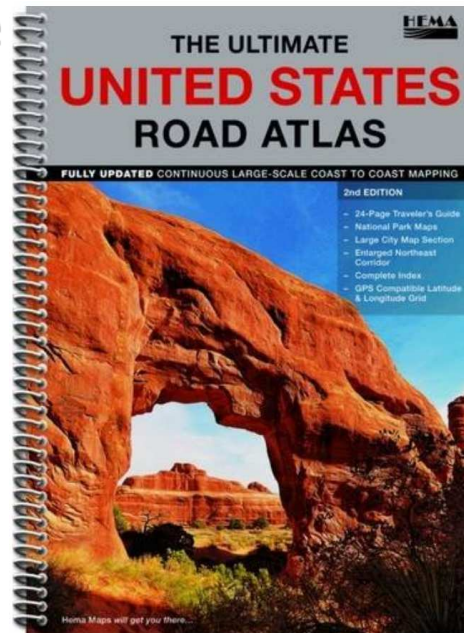
VUCC/r honor roll shows only one person W9FZ earned the 6m award.

Central States VHF Society confirmed their awards chart is up to date.

- The USA is about 35 grids east/west.
- A trip over-and-back can yield about 70 grids.
- I've done 27, so one round trip is all I need, right?

Road Map – Single Scale

- ▶ HEMA Road Atlas
 - www.hemamaps.com
 - Amazon \$28
- ▶ Apply grid marks
- ▶ Highlight route
- ▶ Mark highlights and way points
- ▶ Forgot it in Washtucna
- ▶ Used a one-page cheap map the rest of the trip



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Good idea: use a fixed-scale map

All other road maps have a big problem: all states are the same size: one page!

10-20 hours to mark up map pages, add grid names

Fun to ask at every restaurant and gas station: where am I on this map?

Someone Told Me “You Need a Sign”



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Antennas:

- KB6KQ horizontal loop
- M2 6m5 beam on roof
- Moxon 6m beam on roof
- Telescoping mast inside sock
- 5/8 wave vertical whip on roof

“Before” picture in my driveway

Someone said I need signs to answer questions on the road.

I’m not sure I quite grasped the right idea

Signs say; “Alien Extermination Rover” and “Alien Trouble? 146.520”

I get some pretty funny comments and situations

6-meter Radio: Front



This is cockpit photo of desk, Kenwood for APRS, and Icom 6m mobile.
Notice paddle is upside-down. Doug AC7T showed me the easiest way to fix a reversed paddle.
One button press on radio plays out CW message.

Desk supports laptop, or 3-ring binder, or maps. Usually maps. Rubber bands hold things in place.
Under the desk is drinks, snacks, camera, and supplies.

Kenwood supported by cupholder mount.
Icom supported by mount connected to bolt holding the seat.

Remember the 2014 Conference in Moses Lake? I won the door prize Icom IC-7100.
Two stations = backups for everything, except generator, truck and me.

In motion: Icom IC-7100, horiz. loop (plus spare Moxon, a little gain, quick setup)
Hilltop: Icom IC-9100, 500w amp, 5-element beam

The hilltop station has 18 dB xmit gain over the in-motion station

6-meter Radio: Back



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2018 June VHF Contest started 11 am Saturday.

- Icom IC-9100
- Icom PW1 kilowatt amp (running 500w)

Rod WE7X and I arrived Friday 6/8

We camped by the Gold Mtn lookout tower, 4,680 feet.

I was on the air early Saturday morning.

Joe W0FY and I were in phone and text contact throughout.

He was watching electron clouds (skip reports) and we'd attempt from time to time.

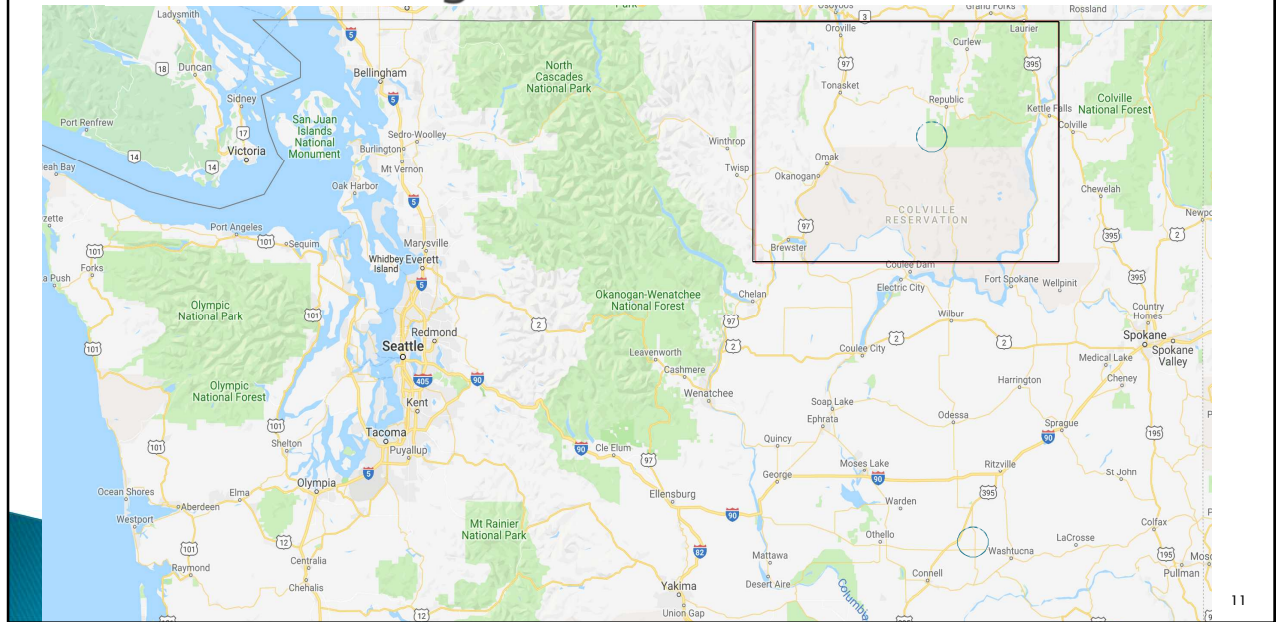
This is an awkward distance EM48rp-to-DN08se is 1538 miles:

Longer than single-hop, shorter than double-hop, too far for meteor scatter.

This station is completely designed for remote mountaintops.

Good idea from Marshall K5QE: Bring all the power and antenna possible.

DN08 Okanagon



I was in DN08 once before in 2012 during a rushed contest exploration.

I tried to go north-to-south through all state grid squares.

Digression on roving route strategy:

- Don't listen to East Coast rovers – they say to drive north/south because grids are only much shorter this direction than east/west.
- But in Eastern Washington there are no high-speed north/south roads. It's slow!
- Our only N-S freeway is I-5 – and it's a black hole for propagation.

"Gold Mtn" is on the Colville Indian Reservation. What a spectacular natural resource area for outdoorsmen!

I went on to meet Joe WOFY and have lunch on my drive across country.

DN08 Okanagon: Gold Mtn Lookout



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At dusk, the mast and 6-meter beam is tipped down and rests on a tripod.

Mast: 20' telescoping aluminum built with parts from DX Engineering

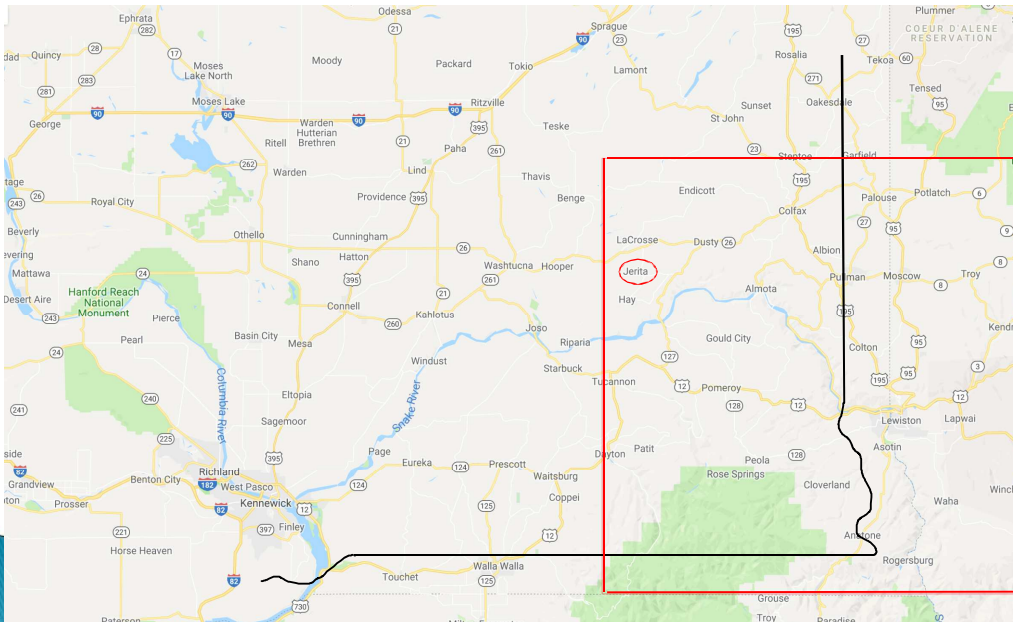
Top: 12v LED floodlight

Mid mast: M2 5-element beam has 18' boom

This is on a "quick disconnect mount" from Down East Microwave.

Note a plastic bin with a compass rose sits under the mast

DN16 Palouse



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I was in correspondence with many people while planning this trip.

A few requests arrived for local grids needed along my route.

I declined DN02, 03, 04 even though they're rare, because they were too far from my Southern Idaho route

I accepted a secret mission to DN16 Palouse for friends. After all, how hard can it be?

DN16 spans WA-ID with about half in each state.

I spent the night in Washtucna so it's only about an hour's drive from DN06 to DN16.

DN16 Palouse: Jerita



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How many antennas can you see?

1. Moxon on mast pointing away from us
2. KB6KQ loop under the truck
3. 5/8 wavelength dual-band whip on roof rack
4. 6 meter beam stowed on roof rack

The telescoping mast under the white cover doesn't count. It's not an antenna. Note plastic bin again under mast with compass rose.

Beforehand it took some hours to find the nearest likely hilltop just over the line in DN16.

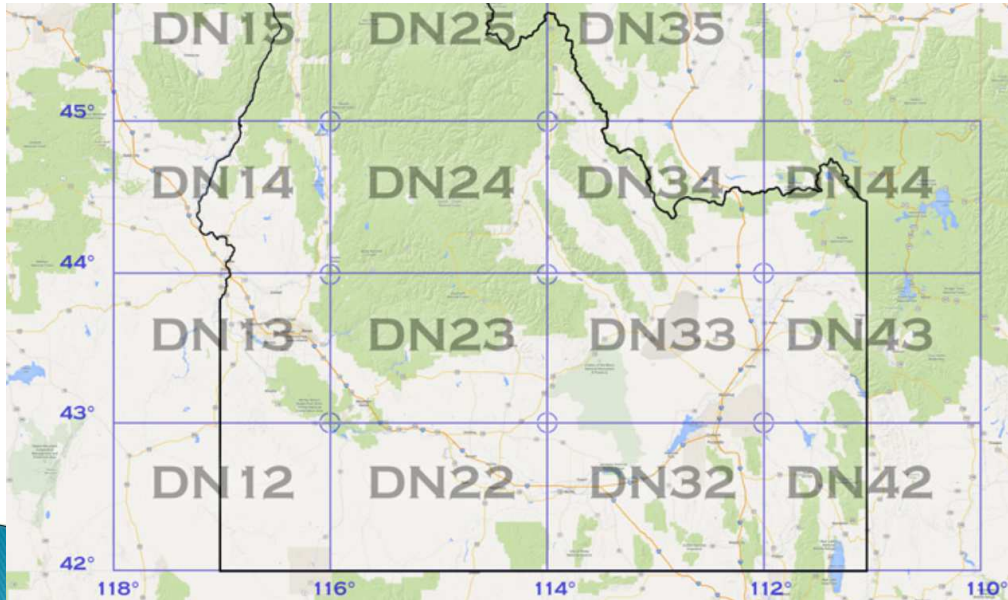
Parked in DN16br where it was hot, windy, dusty, and difficult to keep antenna pointed. No luck with horizontal KB6KQ loop, struggled to put up Moxon in high wind, still no luck.

No contacts. Tried two hours in hot windy conditions to work Seattle (Jim K7ND, Tom KE7SW), no luck.

Good idea: Ham radio is a hobby that we do for fun. A few numbers in a log are not critical. Move along and go have fun!

So I drove to Boise by following Garmin navigator through many miles of small country roads in this corner of Washington. Heavenly.

Idaho Grids South



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My goal is to activate all grids in Idaho – there are 20 grid squares.

There are eight grids along the southern border of Idaho:

DN12-13, DN22-23, DN32-33, DN42-43

I've already activated DN12-17, so all I need to do is visit six grids and work someone, anyone.

DN23 Southern Idaho

23	DN23	wanted by Steve W5KI, Al K8SIX, Ira K4YMQ					
24	DN23	Motel in Boise-Mtn Home-Idaho City			Mountain Home	Id	https://goo.gl/maps/LruXZXCrm2u
25	DN23	Sunset Mtn Lookout	43.89879	-DN23ev25 115.64682		Id	optional: long drive
26	DN23	Danskin Lookout	43.41305	-DN23ej09 115.65956		Id	
27	DN23	Bennett Mtn South	43.23550	-DN23gf56 115.45155		Id	most likely good spot
28	DN23	City of Rocks	43.16382	-DN23qd09 114.65878		Id	turn east here
29	DN23	Bell Mtn	43.43105	-DN23wk63 114.11115		Id	
30	DN23	Trinity Mtn	43.59885	-DN23go83 115.42896		Id	too remote and snowed-in

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Here's a planning pre-route list.

You get up in the morning at 5am eager to go.

You have a choice of five places and want to explore as many as possible.

Which one would you pick?

I chose the first one.

Mistake.

It was a really long way, plus an hour-long 4WD crawl to the top.

Scenic, yes.

Propagation, no.

Called CQ for an hour or two but the only view was northeast.

Skunked – no contacts.

DN23 Southern Idaho – Sunset Lookout



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Sunset Mtn Lookout DN23ev

Nice lookout. Lots of altitude. Gated closed.

Cannot drive to the peak.

Only view is Northeast

There is nobody out there in the Northeast direction.

Set up and called for two hours. Gave up. No contacts.

Drove back down for two hours. The whole day seems wasted.

DN23 Southern Idaho – Saved by W6XS



18

I have my FM mobile radio. Might was well call on 146.520.

This is my seventh trip across the country and 146.52 is a wasteland with rarely any contacts, even in big cities.

What are the chances I'll make a contact in remote Idaho?

Roy W6XS is active and listening in Idaho City population 485.

We had a nice chat as I drove down the mountain and he met me along the highway with a QSL card.

DN23 is logged and the day is saved.

Good idea: The more remote an area, the more likely hams are using FM radios to keep in touch.

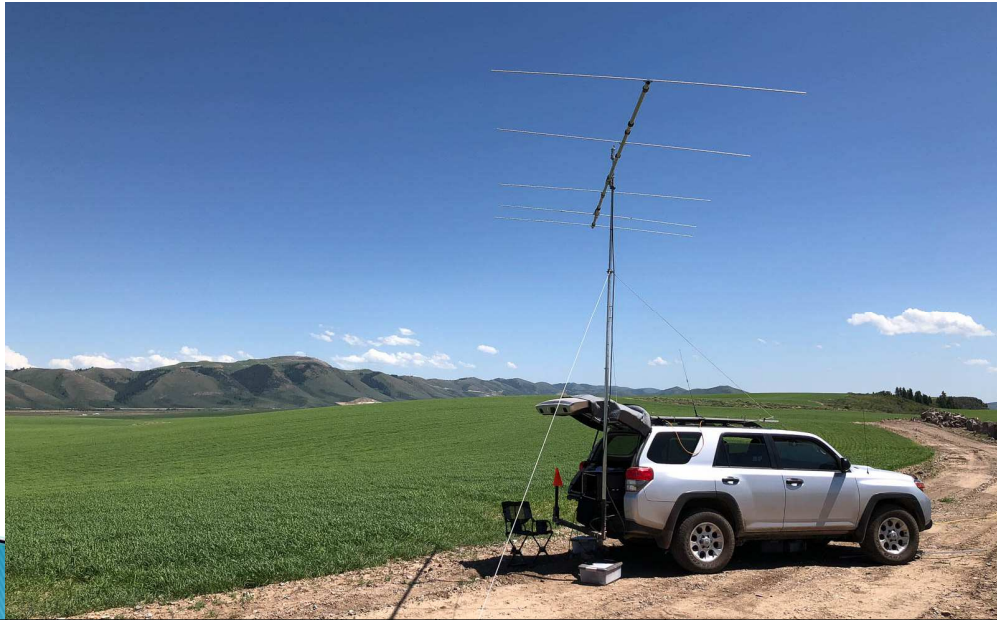
Idaho: DN32 American Falls



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DN32ko American Falls
Early morning meteor scatter
Best from 6 am – 10 am

Idaho: DN42 Soda Springs



20

DN42es Soda Springs

Good idea: Stick to open area in the plains that are easy to reach

Idaho: DN43 Swan Valley



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DN33hk Swan Valley, Idaho – Targhee National Forest
Warning: Try to never operate in a place with “Valley” name
Look for “Skyline” and “Lookout” and “Mountain” names.
This is a slot canyon with big hills on two sides

However the slot canyon is aimed toward Seattle
I made lots of meteor scatter contacts to Seattle K7ND, KE7SW, N6MZ, KD7PY
Many more spanning the PNW from Portland to BC
W7MEM dn17, VE7DAY co70, W0VTT en33
900 miles in many directions

Good idea: if you’re stuck in a valley try MS
Main lobe on level ground is 15 degree takeoff angle and clears low hills. Additional lobes
at higher angles will clear large hills.

Day 10 – Wyoming



Red Canyon, Wyoming

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The most remote and spectacular scenery was driving across Wyoming. Every hill, every valley, every turn was picture-book wilderness.

Here's where I was going to rack up a bunch of grid squares.

I called and called CQ all day long.

It's so nice to be in remote places that the background noise is practically nil!

After six hours, it's time to check the equipment.

I brought my antenna analyzer (Comet AC-500) and yup, no antenna!

The coax had been closed in the tailgate too many times. It had opened.

Good thing I have spares for everything except me, the truck and the generator..

EN02 Nebraska



23

EN02 was chosen as the most-requested grid from FFMA respondents
I looked for a spot in NW corner so it's slightly closer to Seattle
I scouted all afternoon

EN02 Nebraska: Springview



24

There are no “hills” in this part of Nebraska.
However there are several deep valley cuts for the rivers.
So I don’t call this “hilltopping.” Let’s call it “valley-topping” instead.
I ended up at “Heerten’s Farm” for six hours
One by one, everyone stopped to chat... Owner... owner’s wife... postman... newspaper reporter

EN02 Nebraska: Springview Herald

Taking the Scenic Route and Ham-ming it Up Along the Way

Everyone has a hobby. But not every hobby will allow you to take the scenic route across the country. Barry Hansen's hobby is giving him an opportunity to drive across the United States: Seattle, Washington to Elizabeth City, North Carolina, to do exactly what he loves.

His beloved past time is communicating on a ham radio. "Ham radio is alive and well," Barry shared, "there are more people with ham radio licenses now than ever before."

While on her mail route last Monday morning, local mail carrier Stacy Painter came across Barry, who had his impressive radio set-up near Lila Heerten's mailbox along rural dirt road 428th Avenue in western Keya Paha County.

This was no random spot that Barry, who is from Lake Forest Park, Washington, set up his radio. It was precisely where he wanted to be. As Barry began planning his scenic journey across the country, he purposely selected areas. "There is actually a technical answer as to how I got to this exact spot," Barry explained. "The whole world is divided into grid squares (2 degrees or about 100 miles wide and 1 degree tall about 70 miles). This location in Nebraska - Keya Paha - Springview - here at these mailboxes is what they call a rare grid square. I set up in the very northwest corner of this grid square so I can communicate

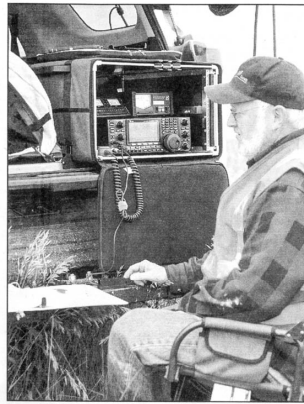
with other ham radio operators from California to Seattle."

Backing up a bit, let's explain what ham radio is. In a simple Google search, it explained that Amateur Radio (ham radio) is a popular hobby and service that brings people, electronics, and communication together. People use ham radio to talk across town, around the world, or even into space, all without the internet or cell phones. It's fun, social, educational, and can be a lifeline during times of need.

For Barry, it's the excitement of experimenting that draws him to ham radio. He was licensed at the young age of 13 and he liked the engineering behind all of it. This passion blossomed into a career in computers where he worked for companies like IBM and a series of other software companies. It was the technical side of ham radio that drew him to his hobby, but it was his love of travel that allowed him to combine the two into a journey across the country. His favorite aspect of being a ham radio operator is the remote places it takes him.

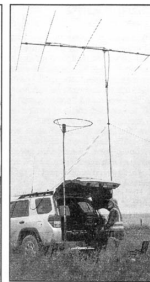
"Get off the interstate," he said smiling, "it's beautiful country."

Now at age 63 and retired, Barry said that he's been actively traveling and doing ham radio for the past ten years. "I've been to every location in Oregon and Washington states with my ham radio, going across the country intrigued me," he shared. Prior to his cross



Above, Barry Hansen communicates with other people via his ham radio set up in rural Keya Paha County.

At right shows Barry's equipment and set up that he uses to communicate over ham radio.



country trip, he had plotted out where other ham radio operators were so connections could be made. While visiting, beeps of Morse Code sounded in the background. Barry was connecting with a ham radio operator with call sign W0JW out of Truru, Iowa.

Although Morse Code is one way to communicate over ham radio, it's not the only way. "There are lots of choices for communication," Barry added, "like digital that works

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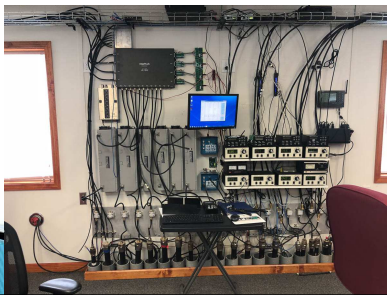
Celebrate July
With a New
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Temperatures Are Rising and So Are Our Certificate of Deposit Rates
Certificate of Deposit Special!

I might have been the biggest thing that happened in Springview Nebraska all summer. The newspaper wrote a splendid article. I believe it captures what makes ham radio fun.

In email before the trip, Craig K9CT said he'd buy me lunch

Illinois: Craig K9CT



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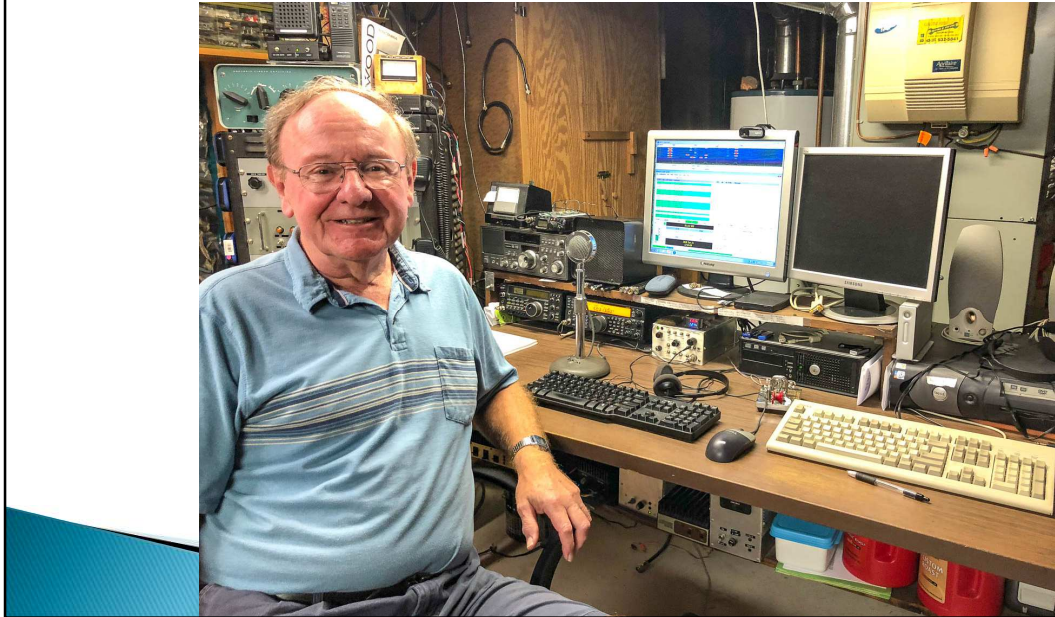
Visited one of the many people I worked along the way.

Craig K9CT had offered me a free lunch before my trip.

He runs a Super Station for contesting, DX, EME and FFMA grid hunting.

- Purchased a 15-acre property a few miles from home specifically for hamming.
- Contest room has four desks, each with two operating stations (pilot and co-pilot)
- Each desk has two of the latest Flex radios and amplifiers
- Four towers, each 198 feet tall. (Any taller would require lights and orange/white FAA paint.)
- Also has bunk room and kitchen in the building.
- www.k9ct.us

Missouri: Joe W0FY



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Joe W0FY bought me lunch. Nice to meet up!
After our successful DN08 contact, he only needs one grid to finish FFMA:
CM93 Santa Rosa Island, California

Hmm, we shall see!

EM87 Kentucky



Grid EM87 is among the top ten most-wanted grids.

“Wait!” you ask, “what is so rare about Kentucky?”

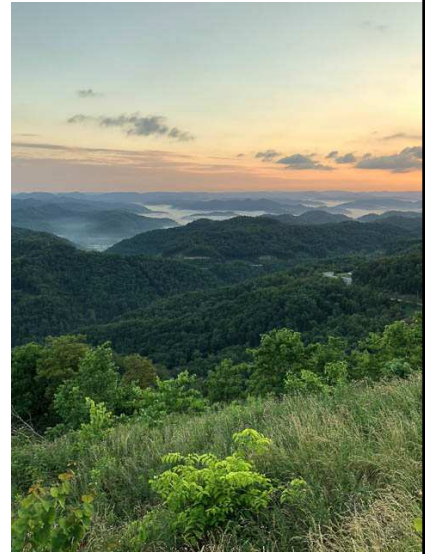
Unpopulated with steep hills and deep valleys.

Houses and hams (if any) are generally along rivers at the bottom.

My armchair scouting found one spot at the northeast and a few hilltops at the southwest.
I allocated an afternoon for scouting.

The NE location was marginal. I took a big risk by traveling a couple hours to the SE spots.
If they didn’t pan out, I would not be able to return to the NE for 6 am meteor scatter.

EM87 Kentucky: Pine Mountain



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Kentucky has "gaps" instead of "mountain passes"

This overlook is at the Pine Mountain Gap

I drove another 500 vertical feet from here up a narrow unpaved road to a ridge

EM87 Kentucky: Pine Mtn



30

Parked on a knife-edge ridge, barely wide enough to set up the antenna.
There's a steep drop-off just beyond the mast support.

Operated:

- Meteor scatter 6 – 10 am
- SSB and FT8 10 am – 2 pm
- Then, Field Day contest began and the bands (and operators) were crazy

EM87 Kentucky: Pine Mtn



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EM87ob

There's a steep drop-off just beyond the generator and vehicle

Most astonishing 6m band opening all trip

Worked anywhere in eastern half of US

Worked SV9CVY in Germany grid KM25 about 5,600 miles

Arrived Elizabeth City, June 28th



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My daughter and son-in-law's yard in Elizabeth City (grid FM16)
I collapsed for three days, repacked, and we drove back to Seattle together using the shortest possible route
Arrived safely after four days and 3500 miles (no radios)

===== How-To =====

Time Sync

- ▶ FT8 needs about 1-sec accuracy
- ▶ MSK144 needs a few sec accuracy
- ▶ Hardware:
 - GPS dongle attached to laptop
 - \$25 eBay
- ▶ Software:
 - RoverLog GPS module
 - <http://roverlog.2ub.org>

The screenshot shows a window titled "GPS Module" with the following fields and controls:

GPS Serial Port	COM1:
Serial Port Mode	4800,n,8,1
Server IP Port	32123
UTC Offset (hrs)	4
Set Computer Time on Next Reading	
<input type="radio"/> Enable	
<input checked="" type="radio"/> Disable	
Restart Server	
Lat Lon (deg)	43.239632 -79.031182
Declination (deg)	10.9 W
Speed (mph)	0.0
Course (deg)	000.0
Grid	FN03if
Date	2005-08-24
UTC	1951
Seconds	37
Exit	

34

MSK144 uses 15-sec transmit cycles. Losing 2 seconds = $2/15 = 13\%$ loss of available time
I had good luck with RoverLog GPS software module

Future

- ▶ CM93 Santa Rosa Island for W0FY, ND0B
- ▶ More Idaho grids for Lewis & Clark award
- ▶ More 6m grids for rVUCC

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CM93: rarest of all grids.

This would be fun but a real challenge. It's a desert island 27 miles from the coast of Los Angeles. It's a wildlife preserve and very restricted. Currently, two hams need this one single grid to finish FFMA: Joe Fleagle W0FJ and Bill Ockert ND0B.

Idaho: I need to activate 8 of 20 grids to earn the Lewis & Clark Award.
One person K7TM has already achieved it for Idaho.

rVUCC? I've activated 31 grids, confirmed 27 grids, only 69 to go!