



Hams for Hackers?  
Hackers for Hams?  
Hamakers?  
Hackers....

# What I am **not** going to talk about



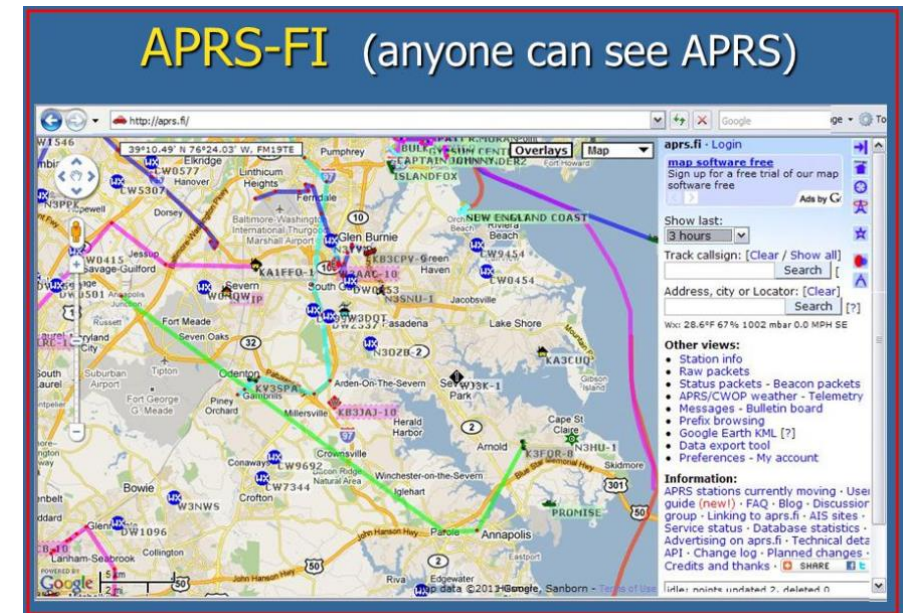
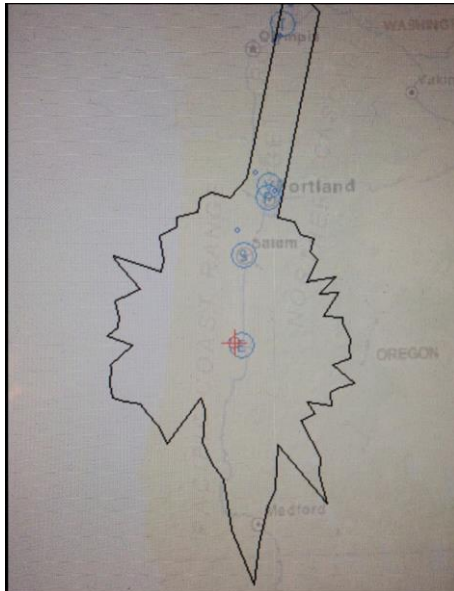
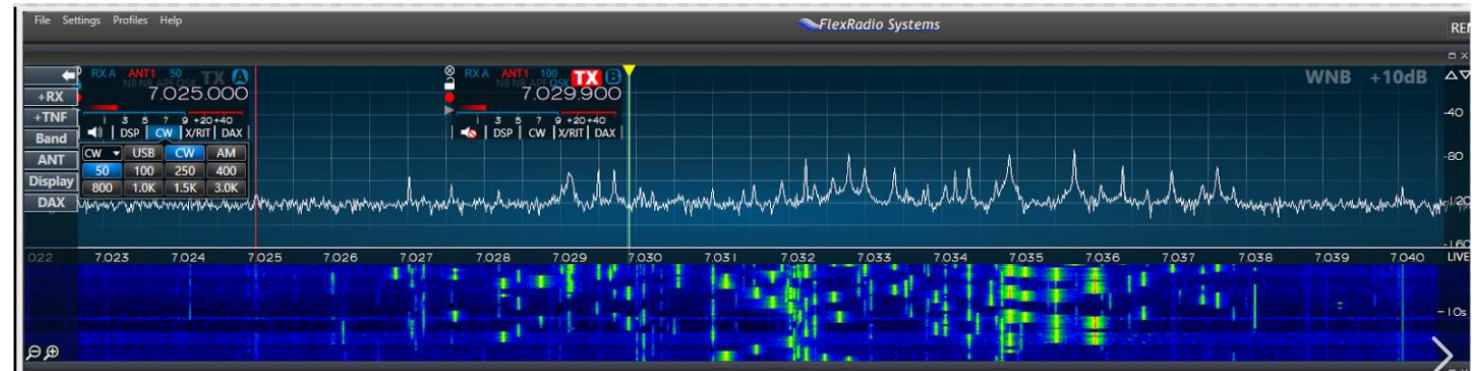
## HAM RADIO STARTER PACK



A ● -	J ● - - -	S ● ●
B - ● ● ●	K - ● -	T -
C - ● - ●	L ● - ● ●	U ● ●
D - ● ●	M - -	V ● ●
E ●	N - ●	W ●
F ● ● - ●	O - - -	X - ●
G - - ●	P ● - - ●	Y - ● -
H ● ● ● ●	Q - - ● -	Z - - ● ●
I ● ●	R ● - ●	



# What I am going to talk about



# Why get licensed?

## Because why not?

- Easy and inexpensive way to grow your knowledge and experience with electronics.
  - Local testing fee is \$15.00.
  - All questions are posted online by the FCC – create your own flash cards and study materials for free.
  - Online practice tests are available on AARL's website.
  - All you need is a US mailing address, government issued photo ID, and a [FCC Registration Number](#) (FRN).
- NO MORSE CODE REQUIREMENTS TO PASS.
  - Unless you are into that kind of thing. ...- . ... -.- -.- ---

# Amateur Radio Licenses

- Level 1: Technician Class
  - License privileges: All VHF/UHF [Amateur bands](#) (frequencies above 30 MHz). Limited operations in certain HF bands.
- Level 2: General Class
  - License privileges: All VHF/UHF amateur bands and **most HF privileges** (10 through 160 meters).
- Level 3: Extra Class
  - License Privileges: **All** amateur band privileges (certain frequencies are allocated only to EC license holder).

# Test questions are on the Internet

The Technician license exam is a 35-question test drawn from a question pool containing 423 questions.

- 75 % is passing!
  - 27 questions needed to win (pass).
- Question pools on AARRL site: <http://www.arrl.org/question-pools>
- Resources available on Ham Exam: <https://hamexam.org/>

Element 2: Technician	Expires June 30, 2022	<a href="#">Flash Cards</a>	<a href="#">Practice Exam</a>	<a href="#">Question Pool</a>
Element 3: General (Expires June 30)	Expires June 30, 2019	<a href="#">Flash Cards</a>	<a href="#">Practice Exam</a>	<a href="#">Question Pool</a>
Element 3: General (After June 30)	Expires June 30, 2023	<a href="#">Flash Cards</a>	<a href="#">Practice Exam</a>	<a href="#">Question Pool</a>
Element 4: Extra	Expires June 30, 2020	<a href="#">Flash Cards</a>	<a href="#">Practice Exam</a>	<a href="#">Question Pool</a>



# FCC Part 97: Amateur Radio Service

- Upsides:

- You get to use a lot more power (insert grunting noise).
- You have primary use on a number of bands (frequencies).
  - Primary use: priority over non-radio services.

- Downsides:

- You have to be licensed.
  - Call sign information is public.
- You have to follow operating procedures.
  - No encryption.
  - Self policing means everyone has an opinion.





# No really .. why?

- Communications during caravan trips, emergencies, community events
  - Volunteer at your next Turkey Trot or ultramarathon.
- Blinkin Lights 201
  - Advancing your knowledge of electronics beyond the simple “make it blink”.
  - Collect pagers to revive the pager network using TNC. It’s a supported Ham Radio frequency that is no longer in use, so why not recycle some old technology in the interest of education? (DEF CON used to have a pager network) ☹
- Automatic Packet Reporting System (APRS)
  - Poor man’s LoJack and telemetry. Allows transmission of “Weather” data.
- Packet radio
  - Used for mesh networks, which is very valuable during an emergency.
- Zork over radio
  - Nerd gaming at it’s finest. See Rick’s blog [post](#) if you’re interested.



# Automatic Packet Reporting System (APRS)

<http://www.aprs.org/>  
([APRS introduction](#))

APRS is a positional and data payload automation communication utility. APRS data is transmitted on a specific frequency tagged with your call sign.

- Devices are listening on the transmission frequency for APRS globally.
- APRS transmissions are posted on aprs.fi for three years.

Used by people around the globe for tracking road trips, teenage drivers, and balloon telemetry (near space balloons).

Anything can be put in the data and transmitted.

Software runs on Windows, Android, IOS, Arduino, Raspberry Pi – small and lightweight.

# Community Emergency Response Team

Licensed amateur radio operators can assist during an emergency beyond just the basic voice transmissions.

- Learn more about CERT at [ready.gov](https://ready.gov) and [Eugene-Springfield CERT](https://www.eugene-springfield.org/cert).

## Mesh Networking

- Amateur radio license allows for higher transmission (up to 1200 watts). Non-licensed users can only transmit up to 1 W.
- <https://hotarc.org/mesh/>

## Winlink2000

- The Winlink2000 global e-mail radio service routes e-mail to any address in the world.
- <http://www.pigate.net/>

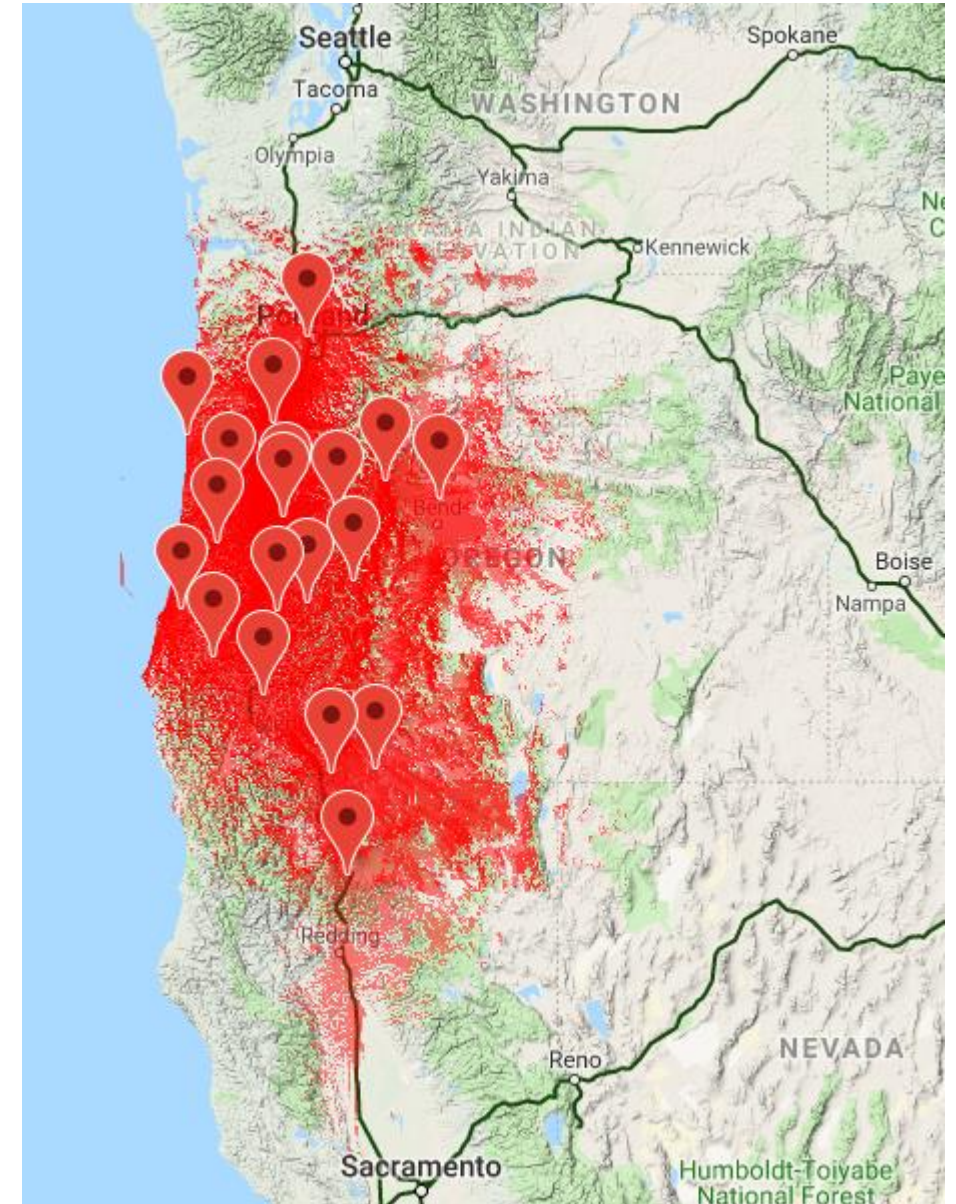
# Amateur Radio in Eugene'ish

## Peak Radio Association (Corvallis)

- <https://www.w7pra.com/>
- Club meetings 3rd Monday of the month
- Facebook link: [PRA Repeater Info Center](#)

## Valley Radio League (Eugene)

- <https://www.valleyradioclub.org/>
- Club meetings first Friday of the month
- Classes and Testing hosted by VRL
  - <https://www.valleyradioclub.org/testing-information/>
  - Classes are available and run about eight weeks. Classes are free, materials are \$30.00.
  - Testing is \$15.00 and available monthly.



# Amateur Radio at DEF CON 27

## Testing at DEF CON:

Registration: <https://con-exam.com/>

Twitter feed: [https://twitter.com/DC\\_Ham\\_Exams](https://twitter.com/DC_Ham_Exams)

- Wednesday August 7th 2019 At BSidesLV (Tuscany Suites) starting at 6pm.
- Friday August 9th 2pm to 5pm and Saturday August 10th 2019 12pm to 6pm at Ham Radio Village.
- There is no fee to sit for the exams at this session and most will get their new license and call sign electronically by the next business day.

## Ham Radio Village

Located at The Flamingo

Web site: <https://www.hamvillage.org>

Twitter feed: <https://twitter.com/HamRadioVillage>

- Our vision is to help the community in a number of ways, including:
  - Understanding just exactly how radio frequency communications work.
  - Showing how you can legally transmit signals at 1,500 Watts of power.
  - Gain a useful toolkit of skills allowing for further experimentation.
  - Learning how the ham radio hobby and radiosport can improve your hacking skills.
  - Providing a forum for hams (and future hams) at DEF CON to meet up, share, and learn.





Questions?