

July 2019

Northwest Amateur Radio Society

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Lunch Break - North

Jul 17 Spring Creek BBQ
 Jul 24 Mi Rancho Grill & Bar
 Jul 31 Panera Bread
 Aug 07 Jason's Deli
 Aug 14 Adriatic Cafe
 Aug 21 Sweet Tomatoes in the Woodlands

Saturday Breakfast:

Saturdays at 7 am
 Denny's 6504 FM 2920 @ TC Jester
 (west of Kuykendahl)

Lunch Break - Medical Center

Jul 17 Antonio's Mexican Grill
 Jul 24 Jason's Deli
 Jul 31 Buffalo Grille
 Aug 07 Vieng Thai Restaurant
 Aug 14 Southwell's Hamburger Grill
 Aug 21 Silver Palace Chinese Buffet

Monday Lunch (was Taildraggers lunch):

Mondays at 11 am; Goodson's in Tomball

Next Meeting: Friday, July 19th

DMR

- Friday July 19th, 2019 at 7:30PM
- Klein Fire Department Administration, 16810 Squyres Rd., Klein, TX 77379.

Ron Matussek, WA6TQH, will present on DMR.

NARS News is published monthly by the Northwest Amateur Radio Society (NARS). Northwest Amateur Radio Society is a Special Services Club affiliated with the American Radio Relay League, ARRL Club No. 2120. Please send all submissions to the newsletter editor before the end of the month prior to publication.

Meeting Location

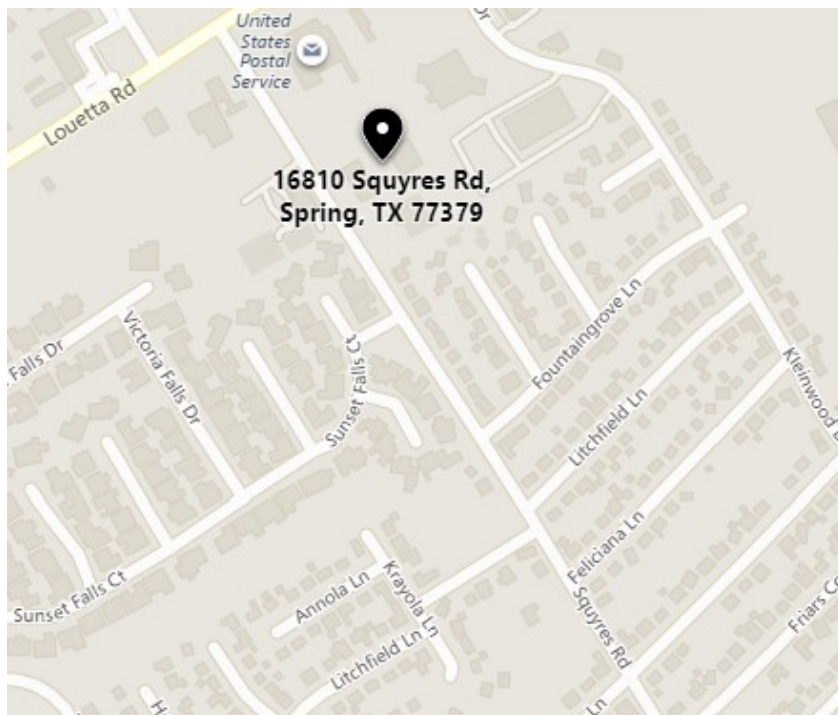
We will meet at Klein Fire Department Administration, 16810 Squyres Rd., Klein, TX 77379. It is located behind Klein Fire Station 4.



Picture from <http://kleinfiredept.com/services/stations/headquarters>

The Board wishes to thank the Klein Fire Department for the generous offer allowing NARS use of their facility.

LOCATION MAP — 16810 Squyres Rd.



President's Corner

July is turning out to be a month full of activities however, there is also a sad note. We lost a very dedicated member of the NARS team and a very dear friend to many. Ron Horton has been combatting health issues for quite some time and passed away July 4th. Information regarding the funeral has been posted via the reflector. The family is asking for help with his final expenses given there is no insurance or savings to cover the costs. Those who wish to help can use this link https://www.gofundme.com/f/ron039s-funeral-arrangements?utm_medium=email&utm_source=customer&utm_campaign=p_email%2B1020-sharing-invite-v5

Let me just highlight a couple presentations planned for our July General Meeting.

Smoke Alarms

Rob Miller (with our PR/PIO firm) would like to address the membership about the upcoming smoke alarm install events.

He will describe the sort of help the fire department is in need of for the smoke alarm blitz that will be scheduled this fall. I'll be there with Simon VanDyk, the owner of Touchstone District Services to discuss the benefits of the organization maximizing participation in the blitz.

VHF Repeater Expansion Plans

The **NARS repeater is back** to its old self. Contacts between Willis (80 miles north) and Webster (40 miles south) are demonstrating that it has good range. Your mileage may vary. So far everything inside of Beltway 8 with a mobile seems very good. Marty has gone mobile to mobile out to 99 and 249, however, was pretty much at the end of the string.

Good crisp audio has been noted.

We are using a Kenwood TKR750 version 2 which is newest repeater NARS has ever used and it looks like it is paying off. Cost was very low thanks to Mike Dietrich.

Now it's your turn. Use it and see how well it works for you.

More improvements could be made depending on use of this repeater.

Don't forget the NARS RAG CHEW NET Wednesday's at 8PM. We challenge you to check in and see who can be the furthest away.

Marty will be giving a presentation at our upcoming general meeting with some really great ideas of how we can expand/improve coverage. Your participation is needed to make this happen so come learn the details.

Continued on Page 4

Field Day 2019

This was the best field day ever! The weather showed it's ugly side however, it had no effect on our event. Benefits of being both indoors and some outdoor. This event was open to the General Public and ALL amateur radio operators. Great opportunity to come experience ham radio and get on the air. NARS provided an opportunity for any non-licensed persons to experience first-hand the fun of amateur radio by allowing them to GET ON THE AIR (GOTA). Food was beyond good....it was great! i.e. Barbeque hot off the grill, Hot dogs, Soft drinks. Kirc Breden N5XJB our Field Day Coordinator will be presenting an overview of the event and lots of pictures at our general meeting.

VE Exam Session

We will be returning exam sessions to our regular location at Tomball Regional Hospital on Saturday July 27th starting at 8:15AM. Walk-ins are welcome. Location will be in the Green Room just inside the main entrance.

Keep reading on through the Newsletter as NARS has a full calendar of exciting activities. Come on out and get involved!

See you at our July meeting.

Ron Matusek, WA6TQH President, NARS

Field Day 2019



Opportunities to Serve

We need some new help for the Wednesday 2-meter Rag chew Net. It could be staffed by one person or more than one person could split the responsibility. It is a good opportunity to mentor new hams.

JULY MEETING

Our July Program will be on DMR. Ron Matussek, WA6TQH, will present on the topic of DMR.

Friday, July 19th at Klein Fire Department Administration, 16810 Squyres Rd., Klein, TX 77379.

DMR Training

If you are interested in obtaining a copy of the Video of each Session please bring a USB stick (estimate 3GB per session) and we can make a copy available to you to download on your USB stick with a NARS donation of \$6.00 per session. You can sign up at the meeting. Many have requested this as a helpful tool to refer back to when programming radio's and other general information related to DMR. This video is NOT planned for wide public publication so take advantage of this opportunity.

MAY MEETING RECAP

Kirc Breden, N5XJB, and others on the 2019 Field Day Committee discussed plans for Field Day 2019.

Congratulations

- Paul F. Kent – New Technician
- Kevin M Ewoldt – New Technician
- Sherwin D. Dickey - New General
- Michael W. Wilson - Upgrade to Extra
- Ryan B. Zachry - Upgrade to Extra

Saturday, June 22nd (held at
Field Day location)

We had 6 candidates taking 7 tests.

Element 2 tests given: 5; passed 3

Element 3 tests given: 3; passed 1

Element 4 tests given: 2; passed 2

Thanks to the VE's in attendance:

Martin Rogoff N5GPS, Stephen G. Protz KA5AUD,
Cindy Grant KM4YGG, Jeff French KM5TW, Brian
Derx N5BA, Sam Labarbera N6HB, Richard
Nelson KF5WRD, and John Parmalee K5VGN.

And to Ron Matusek WA6TQH , NARS ARRL VE Liaison.

Special points of interest:

- Next VE Session July 27th, 2019; 8:15 at
Tomball Regional Hospital - Green Confer-
ence Room.

NARS WEBSITE: W5NC.NET
E-Mail Reflector: mailman.qth.net.

NARS now has a new address!

Please update your address list!

Northwest Amateur Radio Society
P.O. Box 11483 Spring, TX 77391



Houston Transtar Building

Conference Center West Entrance

6922 Katy Road

Houston, TX 77024

V.E. Exams every 4th Saturday of the month at 9:30 a.m.

Contact: Mark Landress, WB5ANN@arrl.net for further info.

Welcome, Congratulations, and Condolences

Ron Horton, KF5LFL , SK.

Ron passed away July 4th at 20:33. Ron leaves a vacancy on the board of directors for NARS. Ron has served as President, Vice-President, Director, SSB Field Day Captain, and in many other ways. Ron was always willing to help where ever possible. He will be missed.



NARS Info

NARS name tag

Any member can request a badge and should contact Cindy, KM4YGG, & Art, KM4YGH.

Board Meetings

The board meetings will be at 6:00 on the same date and at the same location as the general membership meeting, except for January due to the NARS award banquet.

General Membership Meetings

3rd. Friday each month at 7:30 pm. — EXCEPT January Banquet
Located at Klein Fire Station Administration, 16810 Squyres Rd., Klein, TX 77379. Located behind Klein Fire Station 4.

Weekly 2m Net

Wednesdays at 8 pm.
Monitor Reflector for Current Repeater.
Coordinator: Jerry Whiting KB5VGD
g_whiting@sbcglobal.net

Weekly DMR Net

Tuesdays at 7 pm.
Monitor Reflector for Current Repeater.
Coordinator: Ron Matusek WA6TQH
ronm1@att.net

NARS Resource List

Digital Modes (Including DMR)

Walter Holmes – K5WH

Marty Fitzgerald – W5MF

Ron Matusek – WA6TQH

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Directors (term expires 12/31/2020)

Richard Nelson KF5WRD
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Texas QSO Party

Co-coordinator: Chuck Sanders NO5W
832 657-4832

Administrative & General Info.

Marty Fitzgerald W5MF
281 251-4301
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Web site

URL: <http://www.w5nc.net>
Web Master: Bill Buoy N5BIA
281 370-3510 webmaster@w5nc.net

NARS E-Mail Reflector

NARS@mailman.qth.net
Coordinator: Keith Dutson NM5G
keith1@dutson.net

VE Session (ARRL) Manager

Ronald Matusek – WA6TQH
vec@w5nc.net

Texas QSO Party

Co-coordinator: Keith Dutson NM5G
281 516-1466

Ideas for Raspberry Pi and Ham Radio

Richard Nelson, KF5WRD

At various times I have played around with Linux, primarily by loading the OS on older laptops that lacked the RAM and processor demanded by the latest Windows version. In the course of exploring Linux, I acquired a \$30 Raspberry Pi B (c2014) which ran on Linux. The RPi (Raspberry Pi) was a \$35 computer on a small board -- a bit larger than a deck of cards. I played around with it, did some coding, and used it to stream music. But never did much else.

A year or two later I got interested in ham radio where one version of Pi or another would show up. More recently, various club projects including DMR hotspots got me interested Raspberry Pi again – specifically the Raspberry Pi 3B.

Version of RPi

There are various generations of Raspberry Pis and various models. The Generations are numbered, so a RPi 3B is a Third Generation Model B. The previous generations of the Pi which had less memory, slower processors, and even lacked wi-fi. There are also multiple versions: A, B, and Zero. Version A has less memory, fewer output ports, and uses less power. The Zero is a smaller single core processor board often used for single-purpose projects. The B version is the most versatile, so this article is about the B version.

The Raspberry Pi Model B was first released to public. The main changes are faster processors, more memory, and more USB ports. For example, the 1st gen RPi B had only Ethernet port (Wi-Fi required USB dongle, but is standard on 3rd Gen).

Table 1 - Raspberry Pi Models listed Chronologically per Wikipedia

Family Model	Form	Ethernet	Wireless	GPIO	Released	RAM
RspPi 1 B (d)	Standard	Yes	No	26-pin	2012	256MB
RspPi 1 A	Standard	No	No	26-pin	2013	256MB
RspPi 1 B+	Standard	Yes	No	40-pin	2014	512MB
RspPi 1 A+	Compact	No	No	40-pin	2014	512MB
RspPi 2 B	Standard	Yes	No	40-pin	2015	1GB
RspPi 3 B	Standard	Yes	Yes	40-pin	2016	1GB
RspPi 3 A+	Compact	No	Yes	40-pin	2018	1GB
RspPi 3 B+	Standard	Yes	Yes	40-pin	2018	1GB
RspPi 4 B	Standard	Yes	Yes	40-pin	2019 *	1, 2 or 4
Raspberry Pi Zero	Zero	No	No	40-pin	2015	512MB
Raspberry Pi Zero W/WH	Zero	No	Yes	40-pin	2017	512MB

(a) Standard size is 85.60 × 56.5 mm; Compact is 65 × 56.5 mm; Zero is 65 × 30 mm
 (d) DISCONTINUED; * Being Released on Ongoing basis

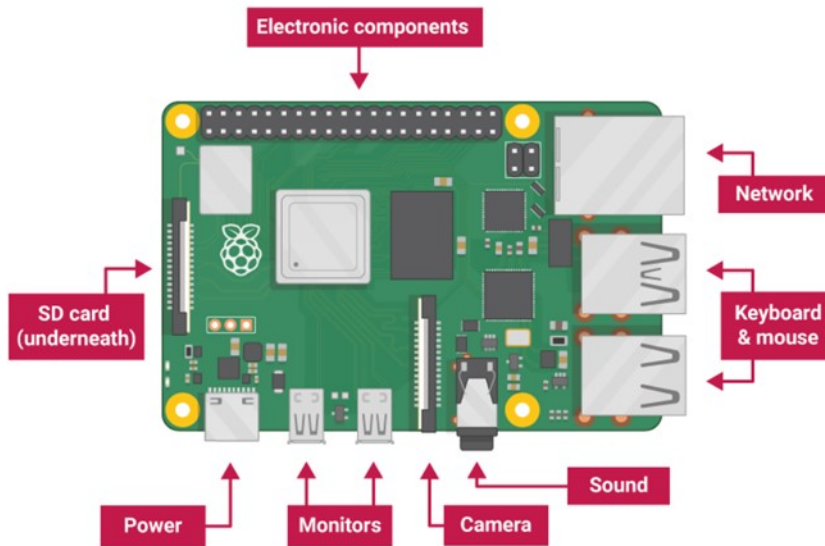
PICTURES

Figure 1 – Raspberry Pi 3 B+ (top) showing connection (bottom)



Raspberry Pi 3 Model B+

On right are stacked USB ports (x4) & Ethernet Port



From "Setting up your Raspberry Pi" Guide at [RaspberryPi.org](https://www.raspberrypi.org)

Figure 2- New Generation 4 Announced

Raspberry Pi 4B announced June 24 – see <https://www.raspberrypi.org/>

VERSION	4B	3B+
PROCESSOR	ARM Cortex-A72 CPU	Broadcom BCM2837B0, Cortex-A53 (ARMv8)
	1.5GHz quad-core 64-bit	64-bit SoC @ 1.4GHz
RAM	1GB (\$35), 2GB (\$45), or 4GB (\$55) of LPDDR4 SDRAM	1GB LPDDR2 SDRAM
Wi-Fi	Dual-band 802.11ac	802.11.b/g/n/ac
Bluetooth	5.0	4.2
Ethernet	Gigabit Ethernet	Ethernet maximum throughput 300 Mbps
USB	2 USB 2.0; 2 USB 3.0	4 USB 2.0 ports
Video	pair of type-D (micro) HDMI	type-A (full-size) HDMI
Power Connector	USB C 5V/3A	micro-B 5V/2.5A

The previous version is the Raspberry Pi 3B+ [See Box about raspberry Pi 4 which was released as I was writing this]. Most of these projects should eventually work on the Gen 4, but check with the vendor before buying anything.

Using the Raspberry Pi

Instead of a hard drive there is a Micro SD card. You need at least 8GB (Class 10 recommended).

To get started for most projects you need the following:

- Raspberry Pi 3 B+
- 5V 2.5A Switching Power Supply with MicroUSB jack
- 8 GB Micro SD Class 10
- Case (optional)

You can get this in a bundled deal (starter kit) or visit MicroCenter or Fry's. Mouser Electronics sells Pis as do the companies Newark Electronics [<https://www.newark.com/>] and Adafruit. Additionally, for input or output you will need a keyboard (USB or Wireless) and a monitor (HDMI).

You can use this as a portable computer, or to run various projects. In some cases you will need additional hardware to get the pi to do radio related things.

Pins and Hats

One feature of the Raspberry Pi is the General Purpose Input/Output Pins (GPIO).

Figure 3 - GPIO Pins



These pins can have jumper wires attached to individual pins, or you can place a “Header” board atop the pins. This header board is called a “hat” and enable additional functionality. You can add on Displays, Cameras, and other hardware. If you look at NEWARK [<https://www.newark.com/>] or ADAFRUIT [<https://www.adafruit.com/>] you can see various Hats. Types of Hats include Sensors, Real Time Clocks, Servo Motors, etc. These can be used to construct various projects. Others have built projects from scratch, wrote code, and basically made me envious.

Software

The Raspberry Pi can run various operating systems, but the easiest is a version of Linux called Rasperian. You can download the software from here: <https://www.raspberrypi.org/downloads/>

NOOBS stans for New Out Of Box Software.

Project software can be obtained using the LINUX library or you can download some software from a place called GITHUB. The following are some ham related software packages.

LINUX – A lot of PI code is in Linux

LINUX

I have used various Linux operating systems versions called distributions or “distros” including Ubuntu, Lubuntu, and Mint [You can check out others at <https://www.distrowatch.com/>]. By way of confession, I’m back on Windows for most purposes.

If you change operating systems, you also have to get new software. For basic Word Processing try Open Office [OpenOffice.org]. This requirement to replace software is true for ham software as well. Some programs have Linux versions. TQSL used to get LOTW Certificates; WSJT-X the Joe Taylor software; etc. ARRL has an article, Ubuntu Linux for Hams by Bert Kolts, ABOVI see <http://www.arrl.org/ubuntu-linux-for-hams>.

I have not tried but there is ham friendly Ubuntu distro: KB1OIQ – Andy Stewart's Ham Radio Linux <https://sourceforge.net/projects/kb1oiq-andysham/>

I have not gone down this path, but some ham software recommendations (per internet) are:

Logging Xlog <http://www.nongnu.org/xlog/> or Jlog <http://jlog.org/>

Digital Modes Fldigi <https://sourceforge.net/projects/fldigi/files/fldigi/>

Radio Programming CHIRP https://chirp.danplanet.com/projects/chirp/wiki/Running_Under_Linux

Packet radio Dire Wolf <https://packet-radio.net/direwolf/>

LINUX COMMANDS

Perform Updates:	<code>\$ sudo apt-get update</code>
Perform Upgrades:	<code>\$ sudo apt-get upgrade</code>
Update the RspPi Firmware:	<code>\$ sudo apt-get install rpi-update</code>
To install programs:	<code>\$ sudo apt-get install <Program></code>
To uninstall programs:	<code>\$ sudo apt-get remove <Program></code>
To run the configuration utility:	<code>\$ sudo raspi-config</code>
To switch to Administrator:	<code>\$ sudo</code>
To add a user	<code>\$ adduser <Name></code>
To shutdown:	<code>\$ sudo shutdown -h now</code>
To Reboot:	<code>\$ sudo reboot -h now</code>

Project Ideas

The advantage of buying certain pre-built hardware and using other people’s code is it makes it easier - a follow the instructions exercise. WARNING- internet projects can get outdated and lead to dead-end links. Check for software before starting in on something.

Here are a few project ideas that are more plug and play.

Decode Digital Modes

Install FLDigi software on the Pi to decode a wide array of data modes including RTTY and PSK. Connect the Pi to audio input from an external USB sound card.

Use for Winlink or APRS

This requires a TNC or Terminal Node Controller “hat” which is the packet radio equivalent of a modem. Coastal Chipworks sells a TNC-Pi2 hat kit for \$40 (\$65 built) for newer Raspberry Pi models. see <http://www.tnc-x.com/TNCPi.htm>

ECHOLINK

According to this person, <https://www.w1gx.us/2017/05/echolink-with-raspberry-pi.html> there are instructions for installing sm0svx/svxlink software at this site: <https://github.com/sm0svx/svxlink/wiki/InstallationInstructions>

WSPR

WSPR is Weak Signal Propagation Reporter (WSPR). Be a QRP Beacon & Check your propagation (see <http://wspnnet.org/drupal/>). TAPR makes a 20m or 30m kit to build a WSPR hat. See https://tapr.org/kits_20M-wspr-pi.html

Operate a SDR-based Panadapter

Using some type of SDR, such as (1) the AirSpy HF+ [see <https://airspy.com/airspy-hf-plus/>] with Gqrx software, or (2) SDRplay RSP1A



SDR Receiver / Monitor Aircraft

Using a Raspberry Pi 3 and \$25 RTL-SDR USB tuner dongle. The new version with R820T2 tuner chip can supposedly receive 500 kHz to 1.7 GHz.

Using the setup from above, go to Flightaware and download software to track ADS-B signals at frequency of 1090 MHz [<http://flightaware.com/adsb/piaware/>].

FT8

In order to do the two-way weak-signal modes requires an accurate clock. There are RTC hats available.

Recently some devices using GPS signals to synchronize the clocks which make portable operation on a RPi possible. A hat called the DRAWS from NW Digital Radio provides this functionality [<http://nwdigitalradio.com/draws/>]. Note you still need a radio in addition to other equipment.