

# Nacogdoches Amateur Radio Club

## 2017 CLUB OFFICERS

Pres: John Cechin - W5FWR

Vice Pres: RM Blake - K5AGE

Sec/Treas: Army Curtis - AE5P

Visit our web site at

<http://w5nac.com/>

## MISSION STATEMENT

The Mission of the Nacogdoches Amateur Radio Club is to support and promote Amateur Radio by public service, offering training to unlicensed interested parties and licensed Amateurs, mutual support of other Amateurs, engaging events that promote Amateur radio to the general public and other Amateur radio operators, and continuing fellowship by regularly scheduled organized meetings and events and have fun.



## DECEMBER MINUTES

The December meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on December 7th. **President John W5FWR** opened the meeting at 6:00 p.m. in the Parish Hall of Christ Episcopal Church. Sixteen members and seven guests were present. Each person present introduced them self. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Club officers for 2017 were officially introduced and installed.

Meeting closed at 6:10 p.m.

This being our Christmas Party evening, an invocation was offered by **Tom W5TV** followed by a great potluck meal and our annual White Elephant Auction. **Don W5COX** did a great job as auctioneer, raising a total of \$299 for the club.

## MY 2 CENTS FOX WILLY ROGER

### JANUARY 2017

January is upon us, the start of a fresh year, a new start, or whatever you want to call it. A time to make your New Year's resolutions, good luck with that one, it also means that we eat better, in AE5P's case that translates to finding some more good eating places.

In the next few months the club has two **SES's** in the works, the first, in February, is Columbia Shuttle, and second, a new one for the club, San Jacinto Day, in April, both should be lots of fun.

Thanks to all that came, ate, and had a good time, to the Christmas party, we must do it again.

In up and coming year many contests will make for fun time for everyone, don't be shy work all or just a few, but get on the bands.

**Question:**

If the designer was left handed, would the statue of Liberty have the torch in her left hand and the tablet in her right?

**Question:**

Who came up with the colors for the holidays, why red and green for Christmas and orange and black for Halloween and pink and white for Easter?

**WHO AM I?**

Who got the answer to the quiz?

The NPOTA event is over for another hundred years; I can't wait till the next one.

The word tree is a bit better these days but confused about the weather, it can't make up its mind as to sleep or wake up.

**REMEMBER:**

Powdered tooth cleaner.  
Pencil sharpening with a knife.

Big Chief tablets.

**THE CRAZY CAT GUY:**

The number of free loaders, the cats, goes up and down. One time the count will be ten and other times it will be twelve. I have looked and looked all over my yard to see if there were a posted sign saying "sucker lives here" how else would they know? Except for Tuff Guy, all are related, and I think Tuff Guy might be father to some. If you remember, Mother appeared injured and half starved, today it's a different story, her limp almost gone and she has

some meat on her bones, she is still a bit stand offish, but will almost come when called.

Every so often one of the outside hoards will come in and spend the night, so far Daisy May and Fluffy has spent the night with me.

One good thing is that the outsiders will eat almost anything, from day old bread to French fries; my garbage is a lot less these days.

Rolly Polly is still frisky; she now helps me with tying my shoes.

Tar Baby knows when its treatment days, she heads to the bedroom and settles in for a long nap and is in the same spot when I return.

When I leave or return home I ask the outside cats if anyone of them has gotten a job, they all act as they have gone deaf, just like kids.

Daisy May now comes into the house and makes herself to home, comes in

eats and checks everything out and just lays around, sometimes it takes an act of congress to get her outside again, right now she's investigating the fire place. Never a dull moment.

I have noticed that Lou is sporting a limp, how or where he got it I will never know, it seems like everyone works him over.

**"THOUSANDS OF YEAYS AGO CATS WERE WORSHIPED AS GODS THEY HAVE NEVER FORGOTEN"**

I will now leave a lot more spaces for the others to use, don't be shy, and fill up the pages, you try it sometimes, but you can't use my Word Tree.

**LIVE WELL, LAUGH OFTEN, LOVE MUCH!!!!**

Let me know, what do you think?

**KEEP YOUR POWER DRY AND YOUR HEAD BELOW THE HORIZON.**

HAPPY TRAILS

John Cechin W5FWR  
[Carrots4ever2@gmail.com](mailto:Carrots4ever2@gmail.com)

## **FROM THE VICE PRESIDENT**

### **A cheap and clean source of power**

Power supplies: we depend on them. The problem between radio operators and power supplies is what I like to call, the "money to magic ratio". Dedicated amateur radio power supplies can seem disproportionally expensive compared to the magic our radios produce. Our requirements in the ham radio world are simple, a dependable and quiet source of power to get the job done. So why the expense? I don't really know, but I can offer an alternative.

This article (and mostly from a linked article) will show you how to convert a Hewlett Packard 47amp 12 volt, server power supply (PS) for less than \$30

total cost. The conversion can be done in under an hour. And I assure you, the job these HP server power supplies did in their last employment demanded quality.

So, let me introduce to you the PS we will be working with. It is a Hewlett Packard model DPS-600PB ESP135. It is rated at 575W, or 47A at 12V. This particular PS is called "redundant hot swappable" meaning the servers these power supplies' operated ran 24/7. As needed, you could pull the PS out with the server still running and replace a PS. Picture the modern servers you see that fill entire rooms.

You can find this PS on Amazon or Ebay under the name "DPS-600PB ESP 135" and you will find the prices range from \$19 shipped for a used unit, \$40 for refurbished, and \$60 for new. I suggest getting a used unit from Amazon, they are \$19 shipped. That is what I have done, and my converted PS has been running great for over two

years. Here is a direct link to the Amazon seller I purchased from. [https://www.amazon.com/HP-Compaq-338022-001-Hot-Swap-DPS%20600PB/dp/B0045JSSWO/ref=sr\\_1?ie=UTF8&qid=1427030916&sr=8-1&keywords=DPS-600PB+ESP+135](https://www.amazon.com/HP-Compaq-338022-001-Hot-Swap-DPS%20600PB/dp/B0045JSSWO/ref=sr_1?ie=UTF8&qid=1427030916&sr=8-1&keywords=DPS-600PB+ESP+135)

In the interest to save time and space, you will find a link below that is the most comprehensive and best described method to convert these power supplies. Also, I have included a reader's digest version below the link in **BOLD**, just in case the link disappears or is unavailable.

<https://sites.google.com/site/tjinguyltech/my-projects/HP47A>

Use a 1k ohm pot between pins 3 and 9 (+12 return sense) to increase voltage above 12v.

Use a 1k ohm pot between pins 5 and 9 to decrease voltage below 12v.

Or use a single 2k-10k pot with the outer legs tied to pins 3 and 5 and

the center wiper to pin 9 for voltage adjustment above and below 12v. Voltage is adjustable up to 13.8v on this supply. OVP starts at 13.82v. If the PS shuts down at 13.8v with a load then just back down to a voltage that works for your particular situation. Short pin 4 to ground to slow fan speed to a minimum or use pot for variable speed.

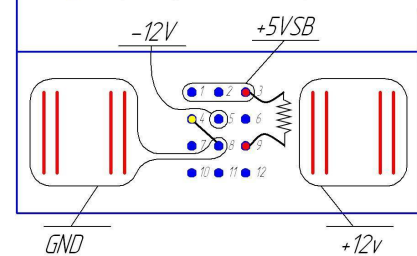
Once pin 4 is grounded, fan speed will be automatically adjusted based on load and ambient temperature. Pin 4 is already internally connected to ground on the PS-3601-1C version of the ESP135 series. Therefore, connect it to +12v to set fan speed to maximum.

Pin 11 is the +12v current share pin. *Short pins 6,8 and 10 together to power up.*

265Ω	=	13.8v
290Ω	=	13.7v
330Ω	=	13.6v
370Ω	=	13.5v

DPS-600PB Voltage adjustment  
Use a 1k ohm potentiometer between pins 3 and 9.

● Short pin 4 to ground to slow fan speed.



See a larger version of this drawing on the last page of this newsletter.

73 de RM Blake K5AGE  
[k5age@fastmail.com](mailto:k5age@fastmail.com)

## NOTES FROM OUR EC

Happy New Year, well maybe depending on when Army publishes the newsletter.

This EC column has been a month in the making including a few days of writer's block. Last month I discussed the VOA radiogram and some of the software you can use to decode it. This month I want to talk NBEMS. Two caveats before I get too deep into this. I am using FIDigi in a stand-alone mode as a digital console-- I am not using it for station control and I do

not have the computer connected to my radio. Which means if you are looking to use your FIDigi for station control, I can't help you yet. Let's dig in to NBEMS.

Narrow Band Emergency Messaging System (NBEMS) is a digital communications system using the Fldigi family of software. The nature of emergency communications is growing and with the need for more information than can be adequately passed via voice, some of the ARES districts are using this system.

The philosophy for NBEMS was keep it cheap, simple, open source, not infrastructure dependent, FUN, and use it on any computer and any radio.

Fast Light Digital (FIDigi), FIMsg, and AndFIMsg comprise the software components for NBEMS. All are free and open source software--nothing proprietary here, please check the references at the end of the column (there will be a few) for

the website to get your free copies. FIDigi and FIMsg operate in the PC environment and will work under the Apple OS using the parallels PC emulator. AndFIMsg operates with the Android operating system. TIVAR, a receive only FIDigi software, is available and operates under the Android system. I will use FIDigi whenever I talk about any of the above software unless there is something unique that needs to be addressed.

Obviously, you will need a computer or an Android tablet or an Android phone to operate. The computer will need to have as a minimum, a sound card and either an onboard microphone or an external microphone connected to the computer. Most computers going back to the Windows XP software came stock with a sound card or one has been installed. Remember to turn off any audio processing when you using FIDigi.

So far we covered 3 of the requirements, cheap, any computer and open source. Most of us have the computer(s). You can get Android tablets at various stores and I'm sure Amazon has them. Some brands are reasonably inexpensive.

Let's look at simple. There are a few of you that remember putting the telephone handset on an acoustic coupler when you wanted to use your computer modem. Yes, I am telling my age. The simplest way to use FIDigi (after you have installed and configured it) is to put your radio microphone up to a speaker when you transmit (don't forget to key the mic and don't forget to ID) and leave the computer microphone next to the radio receiver when you receive. It works reasonably well. I have put a tablet in 'set and forget' mode (thank you Ron Popiel) with my radio and captured some VOA Radiogram shows.

Infrastructure independent: you don't

require a TNC to convert the data to audio and you don't need a separate digipeater to send the data. There is a however, though, if you do not have a sound card on board, Signalink and Rig Blaster have USB adapters to let you attach to your computer, it is an additional device. Some of the more modern radios have USB connectivity and act like a sound card driven by your computer. Installation of drivers is required on your computer specific to your radio.

I'll make a quick comment on fun then get to my references. Most all of the bands down in CW country have a digital home or many digital homes depending on what mode you are using FLDigi can communicate via a number of digital modes, PSK, MFSK, Olivia, MT63, I think it will even decode CW. Ask Dr Tom. He has been playing around using FLDigi and I'm sure has a few contacts.

We'll cover a bit more next month about some

basic configurations for FLDigi and AndFLMsg.

I hope everyone has a great New Year.

References:

**fldigi**

<https://sourceforge.net/projects/fldigi/files/>

**AndFLmsg** and **TIVAR**

<https://sourceforge.net/projects/fldigi/files/AndFlmsg/>

**NBEMS**

[www.arrl.org/nbems](http://www.arrl.org/nbems)

Google search nbems there's a lot more out there.

73 de John Chapman  
KC5MIB

[jlchapman2@juno.com](mailto:jlchapman2@juno.com)

## VE TESTING

Our next VE testing is scheduled for **Wednesday January 18 at 7:00 p.m.** in the Parish Hall of Christ Episcopal Church.

Applicants should bring a picture ID, the original and a copy of their current Amateur license, the original of any CSCE's and \$15 to cover the cost of

the exam(s). Correct change is always very much appreciated. 73 de AE5P

email: [ae5p@arrl.net](mailto:ae5p@arrl.net)

## CLUB NETS

Remember to join us each week for the nets sponsored by NARC. Each **MONDAY** is the **NARC ARES/RACES** net, at 8:00 p.m. on the club's 146.84 repeater (PL 141.3). Second, on **THURSDAY** evenings at 8:00 p.m. is the **Deep East Texas Skywarn Emergency Weather Net** on the 147.32 repeater (PL 141.3). Please join us for one or both.

## NEXT MEETING

The next meeting will be **Wednesday January 4th at 7:00 p.m.** in the Parish Hall of Christ Episcopal Church. A program is planned.

## VE TEST RESULTS

**Duane Keating KE5NOJ** who obtained his original ham license through the NARC VE testing back in 2007, returned and upgraded to Extra. Duane lives in Hemphill and intends to get active in our club. Please make him feel welcome.

Two voices from the past have been heard lately on the club 2M nets. **Tim Dyess KD5HWO** and **Bryan Skinner KK5XM** are both former members of NARC and after a few years of inactivity are getting back into the hobby. Hopefully we will see them again at our meetings. Both are definitely 'good guys'.

## UPCOMING EVENTS OF NOTE

Mark your calendars for the following events coming up in the next few months. Full information on these events and much more can be found at <http://www.hornucopia.com/contestcal/contestcal.html>

### ARRL RTTY Roundup

January 7 - 8, 2017

<http://www.arrl.org/rtty-roundup>

### North American QSO Party - CW

Jan 14 - 15

<http://www.ncjweb.com/N AQP-Rules.pdf>

### North American QSO Party - SSB

Jan 21 - 22

<http://www.ncjweb.com/N AQP-Rules.pdf>

### ARRL January VHF Contest

Jan 21 - 23

<http://www.arrl.org/january-vhf>

### NARC Shuttle Columbia Special Event Station

Feb 4 - 5

<http://www.w5nac.com>

### CQ WW RTTY WPX Contest

Feb 11 - 12

<http://www.cqwxrtty.com/rules.htm>

### ARRL International DX Contest - CW

Feb 18 - 19

<http://www.arrl.org/arrl-dx>

### North American QSO Party - RTTY

Feb 25 - 26

<http://www.ncjweb.com/N AQP-Rules.pdf>

### ARRL International DX Contest - SSB

Mar 4 - 5

<http://www.arrl.org/arrl-dx>

### CQ WW WPX Contest - SSB

Mar 25 - 26

<http://www.cqwx.com/rules.htm>

### San Jacinto Day Special Event Station

Apr 21 - 23

<http://www.w5nac.com>

### CQ WW WPX Contest - CW

May 27 - 28

<http://www.cqwx.com/rules.htm>

### ARRL June VHF Contest

June 10 - 11

<http://www.arrl.org/june-vhf>

### ARRL Field Day

June 24 - 25

<http://www.arrl.org/field-day>



## Basic Filters - Part 1

by

Thomas Atchison, W5TV

When we begin to deal with filters we must realize that there are four basic ideas to consider. These four basic ideas are shown graphically in Fig. 1 below.

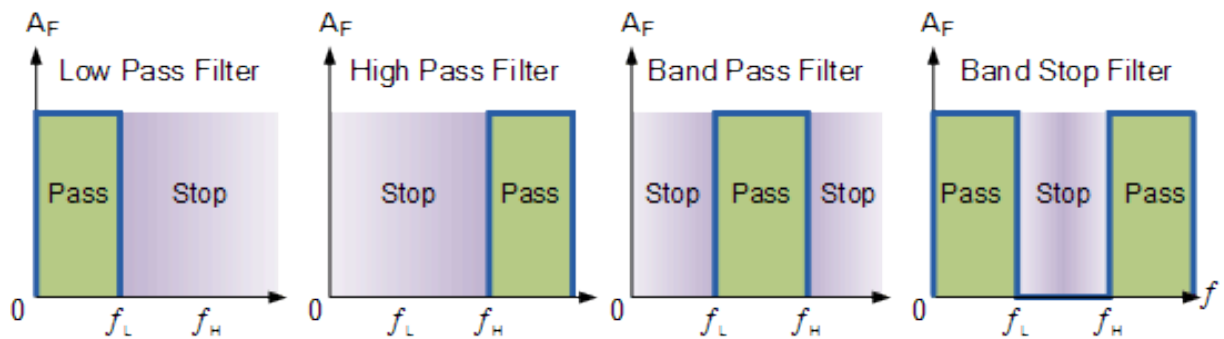


Fig. 1

In each of these graphs we show frequency on the horizontal axis, with frequency increasing to the right, and magnitude of the signal on the vertical axis. In the first graph  $f_L$  represents the cut-off frequency for a Low Pass Filter. Notice that those frequencies that are less than  $f_L$  are passed and those above  $f_L$  are blocked. In the second graph,  $f_H$  represents the cut-off frequency for a High Pass Filter. Notice that those frequencies that are less than  $f_H$  are blocked and those above  $f_H$  are passed. In the third graph, the band of frequencies that are allowed to pass are those between  $f_L$  and  $f_H$  and all other frequencies are blocked. In the fourth graph, the band of frequencies that are being blocked are between  $f_L$  and  $f_H$  and all others are being passed. This last Band Stop Filter is sometimes called a Notch Filter.

The graphs you see in Fig. 1 are ideal graphs since we cannot achieve such a sharp cut-off with actual filters. The region between the pass-band and the stop band is called the transition region.

Suppose we consider a more realistic low pass filter and look at a graph of the magnitude response (Fig. 2).

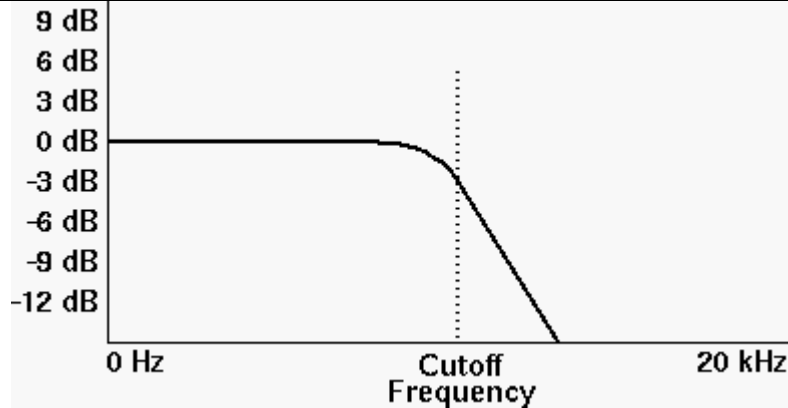


Fig. 2

The plot in Fig. 2 is called a Bode plot. Notice that the output is not attenuated until we approach the cutoff frequency. As we approach the cutoff frequency there is attenuation of the output. It is common to define the cutoff frequency as that frequency where the output is attenuated 3 dB, that is the output drops to the -3 dB level. Notice that the output continues to decrease as we move higher in frequency.

The plot in Fig. 2 is actually a simplification of a Bode plot. A more complete Bode plot should have both a magnitude plot like Fig. 2 and a phase plot. As a signal passes through a filter we have both a change in the magnitude over the range of frequencies and a change in the phase over those frequencies. The behavior of the magnitude and phase of input signals as measured on the output of the filter is usually called the frequency response of the filter. To explain the use of the term frequency response consider placing a signal generator on the input of the filter. As we scan through frequencies from lower to higher we then measure the amplitude of the output signal and the phase of the output signal. The result is a magnitude plot like Fig. 2 and a phase plot. These plots show the effect (or response) that the filter has on the input frequencies magnitude and phase.

Therefore, a Bode plot is a graph of the frequency response of a system. It is a combination of a Bode magnitude plot, expressing the magnitude (usually in decibels) of the frequency response, and a Bode phase plot, expressing the phase shift. Both quantities are plotted against a horizontal axis proportional to the logarithm of frequency. The vertical axis of the magnitude plot is expressed in decibels as shown in Fig. 2 and the phase plot is expressed in terms of the phase angle of the signal as the logarithm of the frequency changes. In amateur radio we are usually most interested in the magnitude plot as shown above.

As we consider the design of a filter we realize that the cutoff frequency is determined by the lumped components of resistance ( $R$ ), capacitance ( $C$ ), and inductance ( $L$ ). The order of a filter is determined by the number of components that involve either  $L$  or  $C$  or both. These are the reactance components which are the components that create the 'filter'. For example a filter that contains only a single capacitor and resistance is called an order 1 filter. If a filter contains a capacitor, an inductor, and resistance, then it is called an order 2 filter. An example of a simple RC filter is shown in Fig. 3.

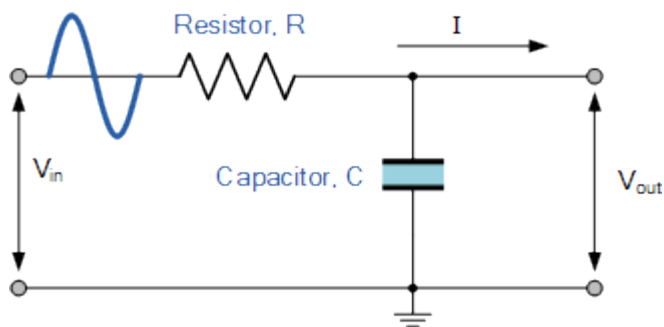


Fig. 3

This is an order 1 filter. The name comes from the fact that it only has a single reactive component,  $C$ . The input voltage ( $V_n$ ) passes through the series resistor ( $R$ ) and encounters the capacitor  $C$ . At low frequencies the capacitive reactance of the capacitor will be very large compared to the resistive value of the resistor,  $R$ . Therefore, the voltage potential across the capacitor will be much larger than the voltage drop developed across the resistor. This results in the signal being passed by this system at lower frequencies. At higher frequencies the reverse is true. That is, the capacitive reactance of the capacitor will decrease with increasing frequency so the voltage potential across the capacitor will become smaller than the voltage drop across the resistor. This means that the voltage potential will be much less because of the voltage drop across  $R$ . The result is that the magnitude of the signal will be reduced. We have just described a low pass filter.

We will describe how the cutoff frequency is determined for an RC filter in the next installment of this series. Happy New Year.

Here is a larger image of the power supply connectors from this month's Vice President column.

**DPS-600PB Voltage adjustment**  
Use a 1k ohm potentiometer between pins 3 and 9.

- Short pin 4 to ground to slow fan speed.

