February 2019 Volume 02-2019

Nacogdoches Amateur Radio Club

2019 CLUB OFFICERS

Pres: Jack York – KG5POU

Vice Pres: Bill Rascher – KT5TE

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 having fun.

JANUARY MINUTES

The January meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on January 2nd. **Vice-President Bill KT5TE** opened the meeting at 7:00 p.m. in the Lunch Room of Christ Episcopal School. Ten members were present. Each person present introduced them self. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Army AE5P shared a note on the candidates for NTX Section Manager. It appears we have two excellent candidates for SM. Ballots will arrive by mail soon. If you are an ARRL NTX member, please be sure to vote and mail your ballot back.

Discussion on the January ARRL VHF Contest scheduled for January 19-20. Several members indicated their interest in participating as rovers.

The Shuttle Columbia Special Event station is scheduled for February 1-2. Army AE5P will be coordinating members participation in this annual event.

Meeting closed at 7:45 p.m.

Program:
Army AE5P presented a program on transmit duty cycle, how it varies with

the different modes we use as Amateurs, and the effect it can have on our radios, power supplies, and antennas.

2019 DUES ARE DUE

Dues are now just $20 a year and cover all licensed hams in a family.

Please get your dues to our Secretary/Treasurer either in person or by mail.

Help support your NARC.

FROM THE PRESIDENT

Building the 80 meter antenna:

As before we were all set to launch but dinner came, then company came, then Santa came, then the rains came… and came and came. So after all that and getting back out to the prepared site what do I find??? Washout!! My house is on a hillside and so WAS my site. My wires and pad were nowhere to be found so I assume they were washed down the hill, down the street and down the storm sewer.

So now what? With work, taking time for wife and child play time, projects get slowed down. Do I rebuild my site to go on a moonshot over the tree or try a not so magnanimous effort to get the job done? Hmmm. I will need to dig into my closet to check out my bow and slingshot to see if I should try these first.

I will ponder and get back to you.

73 de Jack York

KG5POU

gtjakco@yahoo,com

FROM THE VP CHAIR

Well February has arrived and I'm still one module short of finishing the K2 project I bought last summer. When my XYL saw the kit spread out on the table she stated that it made her sick with all the tiny parts to install.

But that is the fun!

Besides she will spend hours crocheting bonnets for the horses…

I started the radio for serious in October and worked on it each evening that was available. Fall is usually a very busy season due to the nice weather, so many fall evenings a movie or book was a

better choice. A movie (Twinkies for the brain) is a better choice because you don't want to be distracted or tired when working with instruction details and the small parts of the K2 kit.

By January the K2 was tested and calibrated with the help of Army's AE5P XG2 signal source he built from a kit. It is an excellent match for the K2. Tom W5TV was right! "It's a cool radio to build and use."

To have computer control of the K2 requires a RS232 serial interface. Oops, didn't order that module. It arrived on the last Friday of January.

So this month I should have the radio and computer talking. I might even give FT8 a try at 10 watts. It would be smart to check the duty cycle for the K2 first. <grin>

Logging is probably the biggest reason for the computer connection.

First on my agenda for February will be the K5C Space Shuttle Columbia Special Event, so the K2 will have to play second fiddle.

Until next month take care.

73, Bill KT5TE

bill@watershipfarm.com

NOTES FROM OUR EC

What were you doing on that Saturday, 16 years ago, 1 Feb 2003? Coffee, the newspaper, listening to the radio, TV? Me? I was helping the snack machine vendor to install our new soda and snack machines at the News 9 building in San Antonio. I was also checking the news.

My news station geared up 3 news gathering trucks-2 satellite vehicles and 1 microwave truck, 4 additional trucks to carry the rest of the team and headed to our sister station in Houston to render what aid we could for their mission.

It was the start of a very busy time in Deep East Texas and Houston. Problems arose, ham radio support was activated.

What were the problems? Looking back and drawing from my experience as a Land Mobile Radio manager: RF, RF, RF.

First Cell Phone service. Cell phone coverage in the deep forest was abysmal at that time. It still isn't much better.

Second, no RF infrastructure for the federal agencies. Trunking and repeater radios require equipment other than the hand held or vehicular mounted radios to operate over a wide area. I'm not sure how good city and county services were at that time. Nacogdoches County covers 981 square miles 3.5 % of that or 35 square miles is covered in water.

This was our chance to do what we have practiced in

our nets, the Piney Woods Purgatory and other activities.

I hope that when you look to the stars Friday (or looked depending when you read this) I hope you remember(ed) the heroes of space and all those people that came together that fateful weekend.

Remember to check into the nets Mondays and Thursdays.

Ad Astra de MIB

73 de John Chapman KC5MIB
jlchapman2@juno.com

VE TESTING

Our next VE testing is scheduled for **Wednesday February 21 at 7:00 p.m.** in the Lunch Room of Christ Episcopal Church School.

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

NEW HAM

At our VE testing session January 16, Dan Donovan of Lufkin passed his Technician exam. With the government shutdown, it took a little longer than normal for Dan to receive his new callsign, but has now been issued KI5CZS. Congratulations Dan.

TWO METER CLUB NETS

Remember to join us each week for the two meter 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 February 7th at 7:00 p.m.** in the Lunch Room of Christ Episcopal Church School. A program is planned on FT8, including a live on-air demonstration.

BOOK RAFFLE

At the suggestion of Rusty KD5GEN, we are going to have a book raffle/giveaway beginning with the February meeting. Each month, we will have a current book on a topic of interest to Amateur Radio operators. Everyone present at the meeting will receive one ticket. Additional tickets can be purchased at $1 per ticket, or 6 tickets for $5. A ticket will be drawn at the end of the meeting for the book of the month.

The book for February will be "ARRL's Hands-on Radio Experiments" by Ward Silver, N0AX. You

must be present at the meeting to win.

We are interested to know which books members would be most interested in being a part of the raffle. Send your ideas and suggestions to the Club Secretary.

SOME TRIVIA

Early aircraft throttles had a ball on the end of it, in order to go full throttle the pilot had to push the throttle all the way forward into the wall of the instrument panel. Hence "balls to the wall" for going very fast. And now you know the rest of the story.

Did you know the saying "God willing and the creek don't rise" was in reference to the Creek Indians and not a body of water? It was written by Benjamin Hawkins in the late 18th century. He was a politician and Indian diplomat. While in the South, Hawkins was requested by the President to return to Washington. In his response, he was said to write, "God willing and the Creek don't rise." Because he capitalized the word "Creek" he was referring to the Creek Indian tribe and not a body of water.

One more: bet you didn't know this! In the heyday of sailing ships, all warships and many freighters carried iron cannons. Those cannons fired round iron cannon balls. It was necessary to keep a good supply near the cannon. However, how to prevent them from rolling about the deck? The best storage method devised was a square-based pyramid with one ball on top, resting on four resting on nine, which rested on sixteen. Thus, a supply of 30 cannon balls could be stacked in a small area right next to the cannon.

There was only one problem; how to prevent the bottom layer from sliding or rolling from under the others. The solution was a metal plate called a 'Monkey' with 16 round indentations. However, if this plate were made of iron, the iron balls would quickly rust to it.

The solution to the rusting problem was to make 'Brass Monkeys.' Few landlubbers realize that brass contracts greater, and much faster than iron when it's chilled. Consequently, when the temperature dropped too far, the brass indentations would shrink so much that the iron cannonballs would roll right off the monkey. Thus, it was quite literally, 'Cold enough to freeze the balls off a brass monkey.'

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

Note that all dates shown here are local, CST dates while all contest logging uses UTC dates and times.

CQ WW WPX RTTY
Feb 8-10, 2019
http://www.cqwpxrtty.com/rules.htm

ARRL INTL DX – CW
Feb 15-17, 2019
http://www.arrl.org/arrl-dx

North American QSO Party, RTTY
Feb 23, 2019
http://www.ncjweb.com/NAQP-Rules.pdf

ARRL INTL DX – SSB
Mar 1-3, 2019
http://www.arrl.org/arrl-dx

CQ WW WPX – SSB
Mar 29-31, 2019
http://www.cqwpx.com/rules.htm

SAN JACINTO DAY SPECIAL EVENT
Apr 20-21, 2019
K5T

CQ WW WPX – CW
May 24-26, 2019
http://www.cqwpx.com/rules.htm

MENTORFEST 2019
April 27, 2019
9 a.m. – 4 p.m.
Garland, TX

HAMCOM 2019
June 7-8, 2019
https://sites.google.com/hamcom.org/ham-com

ARRL JUNE VHF
June 8-10, 2019
http://www.arrl.org/june-vhf

ARRL FIELD DAY
June 22-23, 2019
http://www.arrl.org/field-day

IARU HF WORLD CHAMPIONSHIP
July 13-14, 2019
http://www.arrl.org/iaru-hf-championship

Solid State Devices Part 4

by
Thomas Atchison W5TV

The circuit in Fig. 1 is a general circuit to help visualize what happens when different voltages are imposed using V1 and V2. In particular, we want to see how a larger current can be controlled by a smaller current.

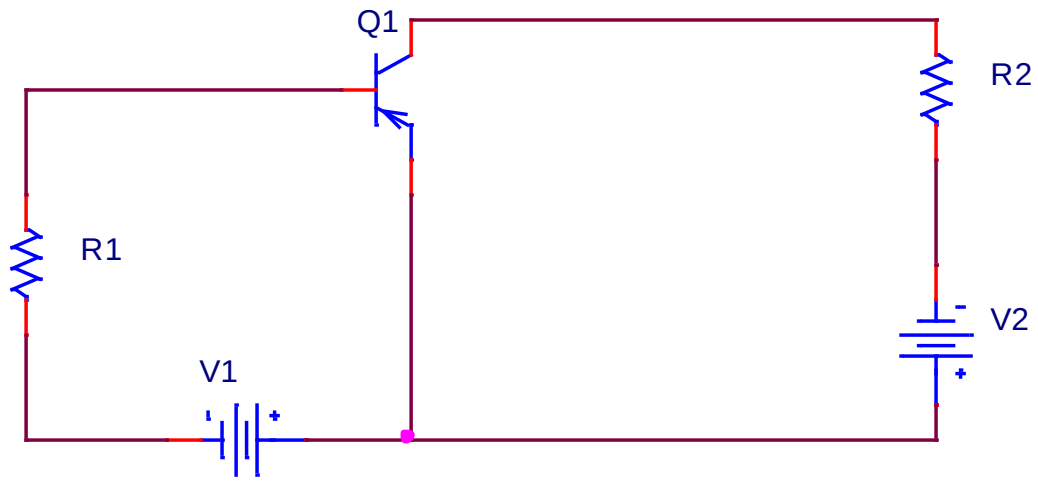

Fig. 1

Notice that the transistor, Q1, has a forward bias on the Emitter/Base diode. Recall that the Emitter is the element that has the arrow pointing in. Now set V2=5 volts and increase the voltage V1 until the Emitter/Base current is 0.2 mA. Suppose this causes the Collector current to be 4.2 mA in this ideal PNP transistor, Q1. If we increase the voltage, V2, to 10 volts, 20 volts, 30 volts, and 40 volts, we discover that the Collector current remains at about 4.2 ma. The Emitter current remains at 4.4 mA. This 4.4 mA comes from adding the Collector current to the Emitter/Base current.

Now return V2 to 5 volts and increase the voltage V1 until the Base current reads 0.4 mA. Since we doubled the Base current you discover that the Collector current is now 8.4 mA. We will now increase the Collector voltage, V2, in 5 volt increments to around 40 volts. The Collector current remains at about 8.4 mA. The Emitter current will remain at 8.8 mA during this process.

If we reset V2 to 5 volts and increase the voltage V1 until the Base current reads 0.6 mA we find that the Collector current is 12.6 mA and the Emitter current is 13.2 mA. Increasing the Collector voltage, V2, does not change the Collector current or the Emitter current.

From these experiments we find that the relationship regarding the Emitter current, I_E, the Base current, I_B, and the Collector current, I_C, is

$$I_E = I_B + I_C .$$

As we continue to increase the Base current we will discover that we reach a point where the Collector current does not continue to increase. In this case we say the transistor is saturated. What has happened is that the Collector gathered all the charge carriers that the Emitter injects through the Base. The charge carriers are holes for the PNP transistor we are using. If we performed this experiment on an NPN transistor the charge carriers would be electrons.

We are seeing that small changes in the Base current produce larger changes in the Collector current. That is, a small Base current controls a larger Collector current. In fact, the output current is an enlarged version of the input. This is called an **amplifier** circuit.

There are two terms that describe a transistor's current gain characteristics, the α characteristic and the β characteristic. These help evaluate how effective a particular transistor will be for an amplifier circuit.

The α is calculated as

$$\alpha = \frac{I_C}{I_E} .$$

In the above example we see that

$$\alpha = \frac{4.2}{4.4} = \frac{8.4}{8.8} = 0.955 .$$

The β is calculated as

$$\beta = \frac{I_C}{I_B} .$$

In the above example we see that

$$\beta = \frac{4.2}{0.2} = \frac{8.4}{0.4} = 21$$.

We will explore these concepts more in later articles. In particular, I hope to consider the simulation of a real transistor in a circuit like the one in Fig. 1.

Reference: Larry D. Wolfgang, WR1B, *Understanding Basic Electronics*, the American Radio Relay League, 2002.

MY TWO CENTS
FOX WILLY ROGER

FEBRUARY 2019

Did you see that blur go down North Street yesterday? I caught a glimpse of it in my rear view mirror. I made some inquires as to what it was and all I could find out that it was January. That's right, another month slipped by us. I understand that City police, sheriff, and state troopers gave chase but without even getting close.

February, the most important day to remember and party to be Groundhog Day, remember to invite a Groundhog to have dinner with you. January was the official start of 2019, as Tennessee Ernie Ford sung, "another year older and deeper in debt" how's the New Years resolutions working out? I myself don't make any, that way I am 100% in keeping them, I call this "ZERO DEFECTS". Christmas is over, the decoration removed and the tree put away or out to the curb, and all can relax for a few months. Now is the time to the next set of holidays.

Now that the New Year has gotten a good foothold on 2019 this is the time to look what's in front of us, no not our stomach, I am talking about radio fun. There is our SES's along with the VHF fun runs, ARRL contests, FIELD DAY, and the TXQSO, too many to fit into this column, jump in and have fun. I might even turn on my rig, hum and all.

How is every one enjoying this on again off again winter, I don't know what to wear for the day, overcoat or sweater, well that's Texas for you.

The other day I was out the door on my way to treatment when I stopped to admire the moon, when I got to North St and Stallings red light an object caught my eye, at first I thought it was the moon, the only thing I could come up with is how did the moon get in the east when I just saw it in the west? A week later at the same intersection the same object was there, it took a bit but the light bulb went on over my head, the object was a ball that is fastened to the high wire to warn tall people. Some time it takes longer than others.

Jack is steamed again this month, why I haven't a clue about what's going on with him, all I can get out of him is "where's the snow". All I do know is that Jack is still mad at me, and he won't even sit down with me and talk it over, sounds like Washington DC.

QUESTION:
Dromedary or Bactrian or Camel, which one is it, one hump or two humps?

Buttermilk, Bread & Butter pickles, Peanut Butter, do all these foods have Butter in them?

Why wash dishes or your car, they are going to get dirty again?

REMEMBER:
Remember radio soaps?

Remember a time when you could leave the doors unlocked?

Remember ice cream parlors?

COMENTARY:
What the hell is going on?

Nancy it takes talking to each other get something done.
I don't know what the big deal about the "wall", the news showed two climbing the wall, up and over, so what did the wall prove? There are other ways I'm sure, all that has to be done is have a sit down talk and listen.

How about this icy weather the north is having, this a picture of what is in the store for good old mother earth, the start of the next ice age, don't bother with the electric blankets, they won't work anymore.

All congress has a say so on all of us, so why don't all the people have the power to vote for all of them? I have written this before, get rid of the party system and the person running for office will stand for the things he/she was elected for and not the party line.

I believe that politicians are in office to keep them in office.

The super bowl is a whole new subject, why are sports held on high with world peace? Don't get me wrong, I like a good, well played college football game, but the pro's side of this sport has a whole feeling to it, I guess its love of the game vs. the love of the Ben's, how sad.

I have many questions on many subjects, but I have a few answers, throw your two cents into the ring.

GUEST COLUMNIST
JACK TALDI

THE CRAZY CAT GUY:

Talk about radio soaps, that's what it's starting to look like around here. The man living in back of me sets live traps and **TB** got into one of these, I had to tear out two slats of the fence to get to her, she was clawing and yelling to get out. After releasing **TB** she just stood there with her butt still in the trap and her fronts standing on the fence. **TB** did some damage to her right hand, she still favors the hurt, I'm not allowed to touch, just look. **TB** spent a few nights out, as usual, but when she came in there was a strange look in her eyes, she's not telling I won't find out till she's ready, she's still in the house not even looking outside now. The strangest part of all this is the trap man went and repaired the fence, go figure. **RP** has gone through a life transformation, **RP** and I had an accident a week or so ago, I got caught up with and stumbled and fell with **RP** all tangled up in my feet, about an hour on the floor and ribs that I would trade with most anyone. **RP** stays almost clear of me when I'm walking now. I think that she has lost some of her years; she now plays more than ever now and demands more attention. As far as going outside, she seems to enjoy it more now, she goes out and sits sometime she will run around back and stay for hours.

TG doesn't come to the front door every day now, he seems to come around about every other day, sometimes **TG** is waiting for me when I get up and others is a when ever time schedule. Sometimes I get him to talk to me.

Heckle and Jackal had a visitor one day, three of them sitting and watching. I still can't shake the feeling that **H&J** are sizing me up for dinner.

DOGS HAVE MASTERS
CATS HAVE SERVANTS

"THOUSANDS OF YEARS AGO CATS WERE WORSHIPED AS GODS
THEY HAVE NEVER FORGOTTEN"

BE THE KIND OF WOMAN/MAN THAT WHEN YOUR FEET HIT THE GROUND EACH MORNING THE DEVIL SAYS, "OH CRAP, THEY'RE UP"!

LIVE WELL, LAUGH OFTEN, LOVE MUCH!!!

KEEP YOUR POWER DRY AND YOUR HEAD BELOW THE HORIZON

HAPPY TRAILS

John Cechin W5FWR
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CHALLENGE QUESTION FOR FEBRUARY

Editor's note: This month we begin a new column where we will challenge our readers with a technical question. The first correct answer sent to AE5P from a current dues paying NARC member will be eligible for a special prize. The prize will be awarded at the upcoming meeting. You must be present to win.

Series RLC Circuit

The following circuit is a series RLC circuit (Fig. 1).

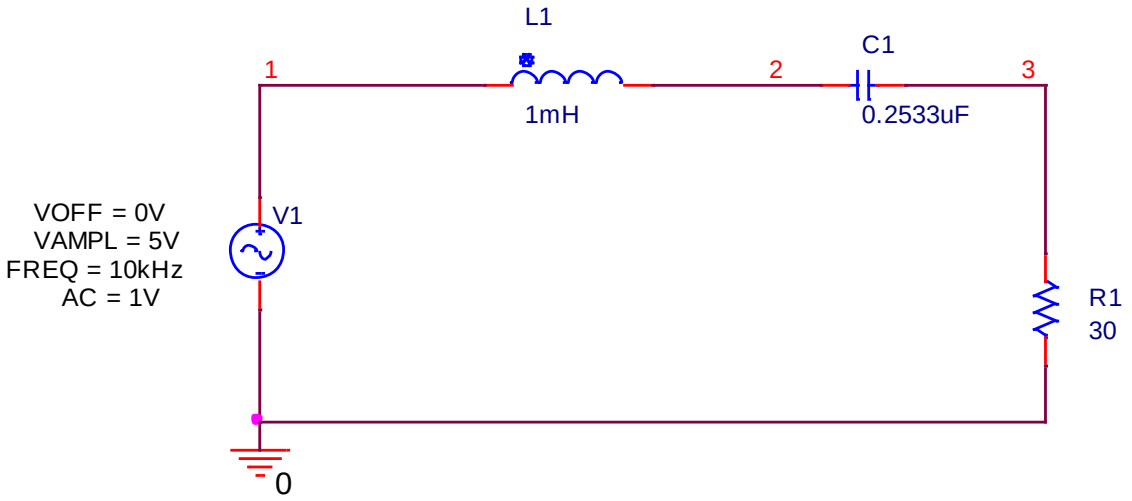

Fig. 1

The source voltage, the voltage across the inductor, and the voltage across the capacitor are shown in Fig. 2. The top graph shows source voltage and the bottom graph shows the voltage across the inductor and the voltage across the capacitor together.

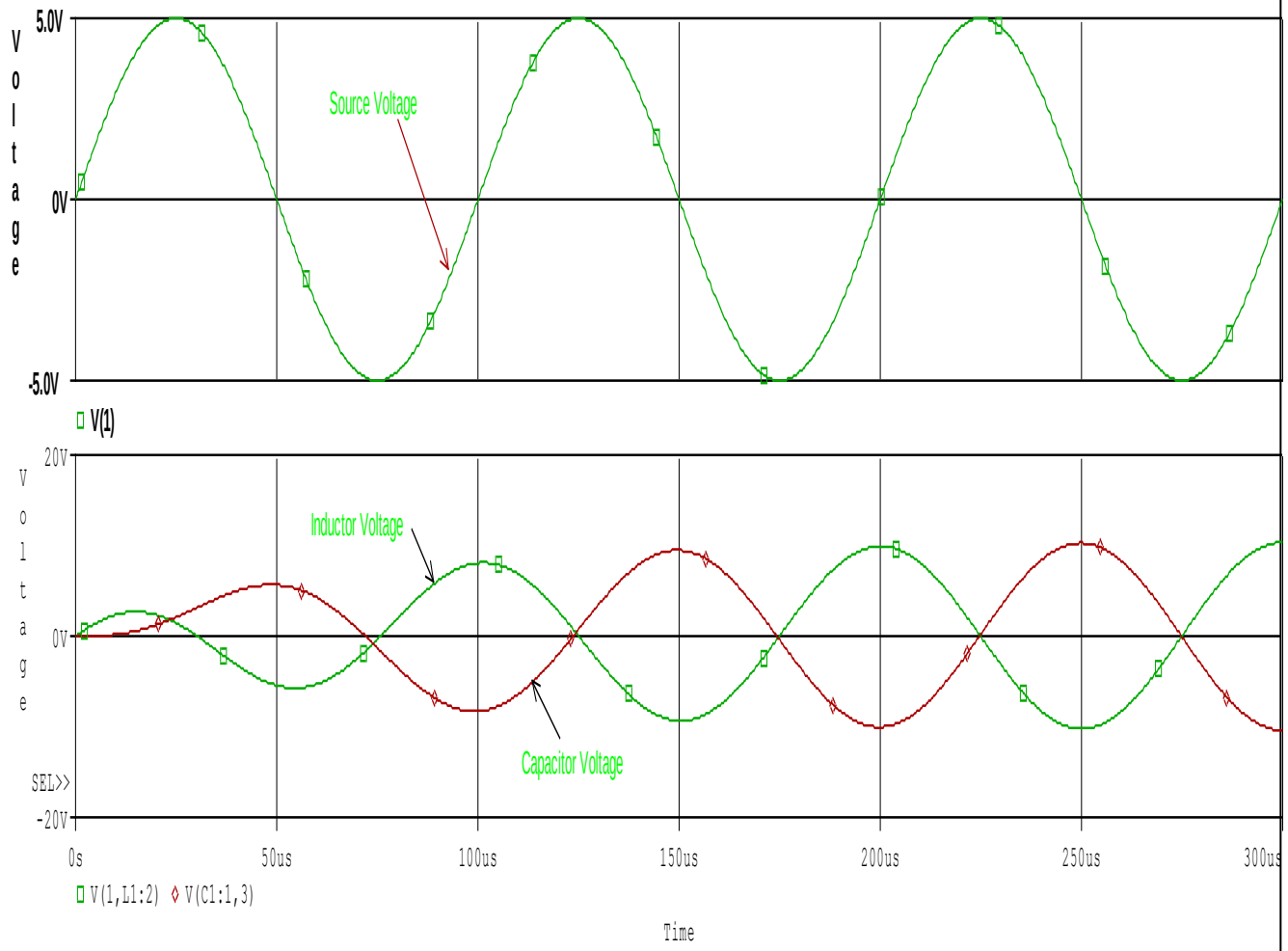

Fig. 2

On the bottom graph of Fig. 2 we see that there is a transient effect during the first $150\mu s$. After $150\mu s$ the phases of the two signals behave uniformly. The source is a sine wave, consequently, the voltage across the inductor and the voltage across the capacitor are also sine waves but their phase relationships are different. **Can you explain why the phases of these sine waves are different? Why is this important to us in amateur radio?**