

THE SPLITROCK TIMES

The newsletter of the Splitrock Amateur Radio Association.
September 2022 edition.

Welcome to the premier edition of the Splitrock newsletter with its new name.

Editor: Fred Wawra W2ABE. [contact W2ABE@arrl.net]

'The Splitrock Times'.

OFFICERS

President Ed W2EJR

Vice Pres. Bob K2RFH

Treasurer Bruce N2OXQ

Secretary Tracey KD2ISX

Trustee Bruce N2XP

Member at Large/'assistant to the President', Fred W2ABE.

Important note: club election nominations are in August and elections in October!

Remember if you are a member of ARRL [and you should be] then subscribe to the weekly email update to keep aware of conditions and activities on the bands and League announcements.

The Club Meets every second Tuesday at 7:30 at the Mount Arlington Civic Center [the log cabin building at the west end of Fern Place]. Come join us for fellowship and learning either live at the meeting or on zoom!

The Club's mailing address is:

S.A.R.A.

PO Box 528

Lake Hopatcong, NJ 07849

You can also contact us at:

www.splitrockara.org OR

membership@splitrockara.org

The repeater is on 146.985, the offset is -600, and the PL is 131.8 hz.

Getting to Know the Club Vice President, Bob Hackett:

In 1989 I was appointed to the position of Emergency Management Coordinator for Roxbury Township. A group of 7 Amateur Radio Operators met with me in reference to Amateur Radio Operations in times of Disaster Emergencies and the value of Amateur Radio for Community events. They demonstrated the use of Auto Patch [which was a way of using ham radio to interface with the land line phone system, before cellphones, ED] and the versatility of Amateur Radio. We formed the OEM RACES group, and I obtained a Technical License and then a General License along with joining SARA. The value of Amateur Radio during Disaster Emergencies and Communications during public events has been invaluable. We have a very active volunteer RACES group in Roxbury and the members also belong to SARA. We have called upon SARA members for large scale events for the past 33 years and the SARA club has been an outstanding group. The Roxbury Twp. OEM Emergency Operations Center has a Kenwood TS 2000, and a Icom IDC 2820 at the EOC along with and IC 2830 in the OEM vehicle. You do not have to be a

resident of Roxbury Township to join our group and our RACES members are also CERT Trained.

“WHEN ALL ELSE FAILS, HAM RADIO PREVAILS”.

Bob Hackett K2RFH.

Member Profile for this month:

‘DOC’ James Kennedy
K2PHD.

Coming up:

The October 1ST hamfest.

To be at: Landing Park
Recreation Center.

Stay tuned for more
information! See future
newsletters or the website
for updated information.

Reminder: there is a \$35.00
fee paid directly to the FCC
for new calls, vanity calls,
and renewals.

THEORETICS DEMYSTIFIED

Theoretics is a name that I coined to describe a column that takes a complicated subject and boils it down into language that the average person with no radio or electronics experience can understand without all the complications that often discourage a new person from delving further into the fascinating world of electronics and ham radio.

The subject this time is:

MAGNETISM:

The topic in the last few columns has been magnetism and its properties and what it does, but what is it and what makes things magnetic? First of all, like gravity we know that it, like gravity is a force but what it is we do not know. However, there is an explanation for why things are magnetic and why other things are not. All materials experience magnetism, some more than others but things like iron and steel and the newer super magnets are magnetic even at rest and that is called ferromagnetism and that is generally the only kind of magnetism that can be 'felt' by us humans. [it is believed that some animals like some fish, have the ability to sense magnetism and therefore use it as a type of guidance system].

Materials like iron and other 'magnetic' materials have electrons, with more electrons that spin in one direction than the other, and this tells us that magnetism is associated with the electrons spin in each material. If the material has electrons that spin equally in 'both' directions, then it is non ferromagnetic or non-ferrous in nature. Conversely, when there are more electrons that spin in the same direction, this causes the wave amplitude generated by those majority spinning atoms to be constructive and this produces the magnetic effect. That means that ferromagnetism happens even when the electrons are not being excited by an outside force, think refrigerator magnet! The spinning's of the majority electrons produce transverse waves, like when two people hold a rope and one person shakes it up and down, and again, the waves, when producing constructive [additive] interference create the magnetic effect.

There is much more to this, but this spinning which is always happening with the electrons causes them to be attracted to protons in the atom or you might say that the protons attract electrons. The spinning of the particle [atom and its electrons] creates the magnetic lines of force outgoing in all direction since the particle is spinning. This leads us to quantum mechanics which is another world from the ordinary common everyday physics, therefore the particles that we have been discussing produce transverse AND longitudinal waves! The waves going out from the spinning electron are both longitudinal [electric force] and transverse [magnetic force]. Remember that in quantum mechanics, the spinning electron can be a particle and a wave. Electromagnetism is a result of a current which causes an increase in longitudinal waves and that causes their motion. The electron in motion due to a current being induced, causes it to spin faster no longer cancelling the opposite force of the proton and thereby produces larger transverse wave and

thereby current [very simply put]. The particles never actually touch but have an influence upon the 'next' particle.

As hams we know that the inducement of electromagnetic spectrum frequencies in the RF region, produce both electrical force and magnetic force waves. There is a lot MORE to this, but the scope of Theoretics is to take the complicated and boil it down to everyday understanding. Lastly the cool thing is that electron movement produces magnetism and conductors in a changing magnetic field produce current or electron flow. Remember that the atoms involved in ferromagnetism have many electrons and that is where the explanation of some with more of a positive charge comes from.

Fred Wawra, W2ABE, 73.

IF you are up early in the morning and want to get on the air there is the 'friendly net' on 7.235 from 7am to 8am 365 days a year. It is a non-political "G' rated net open to all.

MEMBER PROFILE BY:

'DOC' James Kennedy, K2PHD.

WHAT DO YOU DO/WHAT DID YOU DO FOR A LIVING?

I am semi-retired now, but I continue to consult in areas of cyber and critical infrastructure security. I worked for Bell Laboratories as a communications security and resiliency lead

consultant and lecturer before retiring. Was also a Diplomate with the American Bd for Certification in Homeland Security and a retired Professor with both the County College of Morris and the American College of Forensic Examiners as well as a Master Certified Telecommunications Engineer and Certified Ethical Hacker. I also hold three commercial FCC licenses: GMDSS, GROL, and Radiotelegraph Operator 2nd Class with RADAR endorsement.

HOW DID YOU GET INTERESTED IN HAM RADIO?

I have been interested in ham radio since first licensed as WV2SVX in 1961. My dad was an electrician and I loved with working with him on the job. These interests led me to become a radioman with the US Coast Guard and commercial radiotelegrapher and police dispatcher early in my career.

WHAT PARTS OF THE HOBBY MOST INTEREST YOU?

I am most interested in emergency communications and as such have been appointed as the ARES District Emergency Coordinator for Morris, Sussex, Warren, and Hunterdon counties. I also serve as Roxbury RACES deputy radio officer. My second passion is CW operating and I am a member of numerous CW and QRP clubs.

WHAT DOES BELONGING TO SPLITROCK MEAN TO YOU?

I have supported Splitrock initially to help out for expenses to keep repeater up and running. However, as of late I enjoy winter and summer field day operations and the comradery that it espouses.

WHAT SHOULD THE CLUB'S PRIORITIES BE FOR NEXT YEAR?

I will leave that issue up to the club's officers. They have the pulse of the organization. However, I would like to see a monthly or bi-monthly slow speed CW net to aid those members who would like to better their CW skills.

WHAT ELSE CAN YOU TELL US ABOUT YOURSELF?

I have given over fifty years of public service as a police officer, firefighter, and OEM/RACES/CERT member and one of my greatest pleasures is helping others in the community.

WHAT OTHER HAM RELATED CLUBS OR ORGANIZATIONS DO YOU BELONG TO?

I am vice president of the Old Old Timers Club (OOTC) I am a member of QCWA, SKCC, NAQCC, MORSE, FISTS, USCG ARC, and the Professional Radio operators CW Club.

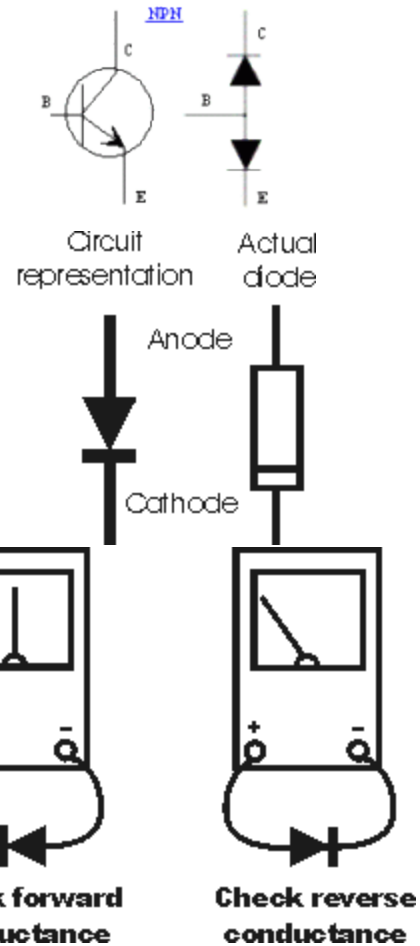
WHAT ARE YOUR OTHER HOBBIES OR INTERESTS?

I like to golf but have not walked the links in a few years. I am a voracious reader, and I have co-authored three books and written over 150 Technical articles on cyber and infrastructure security which were published in multiple languages in multiple countries.

73, Doc - K2PHD

Testing diodes and transistors by Bruce N2XP

The assumption made when testing diodes and transistors is that a transistor is just a pair of connected diodes. Therefore it can be tested for shorts, opens or leakage with simple analog or digital multimeters.



Note: some power transistors have built in damper diodes connected across C-E and resistors connected across B-E which will confuse these readings. Also, a few small signal transistors have built-in resistors in series with the base or other leads, making this simple test method useless. Darlington transistors can also show unusual voltage drops and resistances. When testing a transistor of this type you will need to compare with a known good transistor.

To test a bipolar transistor with a digital multimeter, take it out of circuit and make the following measurements using the diode test mode:

- Connect the red (positive) lead to the base of the transistor. Connect the black

(negative) lead to the emitter. A good NPN transistor will read a junction drop voltage of 0.4V to 0.9V. A good PNP transistor will read open.

- Leave the red meter lead on the base and move the black meter lead to the collector - the reading should be *almost the same as the previous test*, open for PNP and a *slightly lower voltage drop* for NPN transistors.
- Reverse the meter leads and repeat the test. This time, connect the black meter lead to the base of the transistor and the red lead to the emitter. A good PNP transistor will read a junction drop voltage of 0.4V to 0.9V. A good NPN transistor will read open.
- Leave the black meter lead on the base and move the red lead to the collector - the reading should be *almost the same as the previous test*, open for NPN and a *slightly lower voltage drop* for PNP transistors.
- Place one meter lead on the collector, the other on the emitter, then reverse. Both tests should read open for both NPN and PNP transistors.

A similar test can be made with an analog VOM using the low ohms scale. Only 2 of the 6 possible combinations (the B-E and B-C junctions in forward bias) should show a low resistance (anywhere from 100 ohms to several Kohms) and none of the resistances should be near 0 Ohms.

If you read a short circuit (zero ohms or a voltage drop of zero) between two leads, or the transistor fails any of the tests described above, it is bad and must be replaced.

If you get readings that do not make sense, try to compare them with measurements done on a good transistor of the same type.

To test a diode with a digital multimeter, take it out of circuit and make the following measurements using the diode test mode:

- Connect the red (positive) lead to the anode of the diode. Connect the black (negative) lead to the cathode (banded end). A good diode will read a junction drop voltage of 0.4V to 0.9V.
- Reverse the meter leads and repeat the test. This time, connect the black meter lead to the anode of the diode and the red lead to the cathode (banded end). A good diode will read open.

Note: these checks are made with the device that is out of the circuit. When making checks in circuits you get readings in the reverse direction. So be careful if you are not sure remove device from circuit.

Some analog multimeters have their probe colors reversed since this makes the internal circuitry easier to design. So, it's a good idea to confirm and label the lead polarity of your instrument by making a few measurements in resistance (VOM) or diode test mode (DMM) using a k

Don't forget the HAMFEST is October FIRST in Landing!!!

Note!! VE testing is normally at the log cabin on Fern Place on the second Monday at 7pm, BUT for September it will be on the second Tuesday at 6:15!

SEE YOU NEXT MONTH!