BV Rambles:

On 6 November, we had our bi-monthly CCARC board meeting. Nothing really earth shattering was brought up except Bob Kennedy has decided to resign his position because of health reasons. This means there will be two positions on the board open this election cycle instead of the one normally open.

Please everyone take a moment to contemplate this election cycle, maybe not as relevant as the recent national elections, but extremely important for the amateur radio club in Clallam County. The president and vice president positions are open. While I have talked with a few of you about running I have received no positive responses. What does it take to do either of these positions? Certainly not having 2, 5 or 10 or more years in amateur radio, there are plenty of members who have the technical, time in grade to keep the club on the straight and narrow. What it does take is a little bit of an organizer, a bit of a cheerleader, or master of ceremonies to encourage people to participate. Time, well, on the light side, an hour or two a week – plus some meetings (monthly meetings, bi-monthly board meetings and some committee meetings). Either the president or the vice president should try to attend the CCARC monthly breakfast social and the monthly YL social luncheon (which alternates between Port Angeles and Sequim). All a lot of fun!

One of the things that has come up recently is, please; don't ignore automatic announcements made by the repeater. These are made in an obvious computer type voice, usually they have something to do with the power going on or off at the repeater site although you might hear other errors. If you hear one please call either Bill K7WZ, Bob K6MBY or myself. The life of our repeater may depend upon being advised of these announcements.

At the recent board meeting we also discussed having a club summer picnic in the off year from when then Canadians visit us. This was thought to be a good idea and we would like to hear from you as to whether you think it should be done.

This QTC issue is a little thin this month as not a lot was sent in for the newsletter.

We are still working on reformatting the newsletter for originating in Microsoft Word, please bear with us.

Thanks for the time and space.

Chuck N7BV

COMING EVENTS

~ ~ ~ ~ ~ ~ ~ ~

November 14th, 1900 CCARC meeting PA Fire Department

~ ~ ~ ~ ~ ~ ~ ~

There are no Hamfests or Conventions listed for November or December

~ ~ ~ ~ ~ ~ ~ ~

December 14th CCARC Christmas Pot Luck

~ ~ ~ ~ ~ ~ ~ ~

~ ~ ~ ~ ~ ~ ~ ~

We need articles for the QTC newsletter. This is after all your newsletter.

Tell us how you became interested in Ham Radio. What did you do over the summer (just like school) huh!

The more you submit the less the better our newsletter will be.

Thanks, the staff!

Get Your License Here!

Presently there are no scheduled Technician or General Class sessions nor exam sessions the rest of the year.

The ARRL, has announced raising the fee for exams to $15.00 in 2009.

Contact: Chuck Jones, 452-4672 or Tom Newcomb 452-8228

PROGRAM FOR 12 November

Sue Rainy, R.N., a local nurse at Olympic Medical Center, will talk about her work as an EMT trainer and about her broad-based experience in the nursing field.

This should prove to be a very interesting presentation.

2 METER NETS

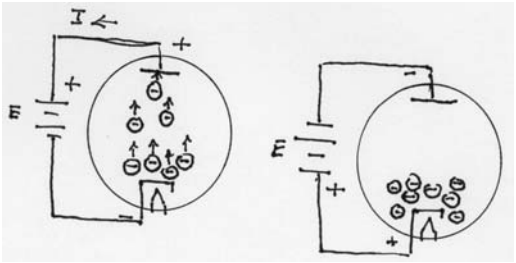
CCARC:
Every Thursday 7:00 pm on the W7FEL Repeater.

ARES/RACES:
Every Tuesday except 1st Tuesday of the month at 7:00 pm on W7FEL Repeater.

W7FEL Repeater: 146.76 MHz, offset down 600 KHz. with a tone of 100 Hz.

Electronic Fundamentals (Unit-8)
Vacuum Tubes

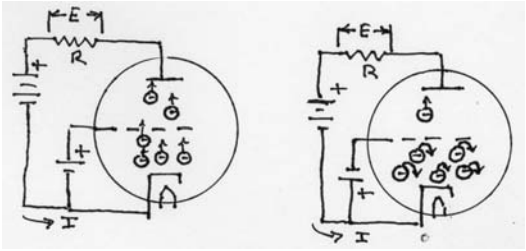
In 1883, Thomas Edison stumbled on the principle of the vacuum tube while working to develop a commercially acceptable light bulb. He made careful notes in his journals but he failed to follow up on his discovery. It wasn't until 1904 that Alexander Fleming patented the first vacuum tube **diode,** the Fleming valve. The principle upon which a vacuum tube diode works is quite simple.



(Fig-1)

A tungsten **filament** or **heater** is surrounded by a metal **cathode** that emits free electrons when heated. The electrons form a kind of "cloud" called a **space charge** in the vacuum near the cathode. If another piece of metal, called a **plate** is located some distance away, and a battery connected with its negative terminal to the cathode and its positive terminal to the plate, the electrons hovering near the cathode will be attracted to the plate and current will flow through the vacuum in the tube. If the battery connections are reversed, electrons are repelled by the anode and the current flow stops. In effect, the diode is a kind of check valve, allowing current to flow during positive half cycles and blocking it during negative half cycles. More about this when we talk about power supplies and detectors.

Meanwhile, others were experimenting to see what else could be done with Fleming's "valve". In 1885, Lee DeForest introduced a wire **control grid** between the cathode and anode and the *Audion* **triode** amplifier resulted. It was a significant breakthrough that gave sound to motion pictures and founded a great electronic industry. Instead of rectifying AC the vacuum tube could now be used to amplify it! Here's how it works.

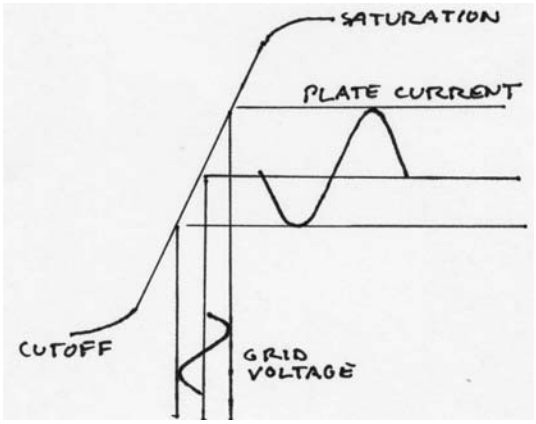


(Fig-2)

Direct current is applied to the plate of the vacuum tube through a series **load resistor.** If a small positive voltage is applied to the control grid, electrons from the space charge will be attracted to the grid but most will pass between the wires and continue on to the plate. The more positive the signal on the grid, more electrons will be accelerated toward the plate and more current will flow. At some point, additional positive voltage on the grid will have no effect. This condition is called **saturation.**

If a negative voltage is applied to the control grid, some of the electrons will be repelled back toward the cathode and current flow to the plate will decrease. If the voltage on the grid is negative enough, current flow will cease altogether and the tube will be in a condition called **cut off.**

If AC is applied to the control grid, the current of electrons through the vacuum will follow the applied voltage, making the tube into a current amplifier. The changing current, flowing through a load resistor will result in a voltage output that mirrors the input, and whose amplitude is proportional to the current flowing in the circuit. A typical plot of control grid voltage vs. plate current, called a **transfer curve**, looks like this.

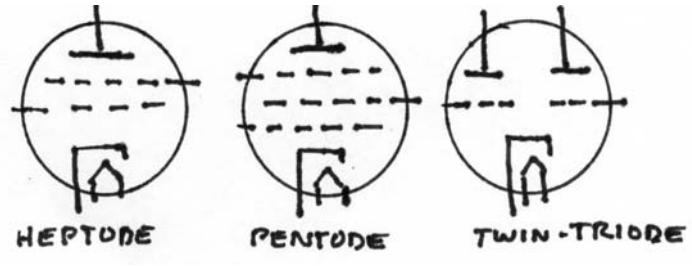


(Fig-3)

The amplification slope is steep; meaning a small change in grid voltage will result in a large change in plate current and a correspondently increased voltage across the load resistor. Notice the tapering off at the low and high ends of the curve. These represent the **cutoff** and **saturation** regions where minimum and maximum current flow occurs. Most applications are designed to operate within the center, or linear, portion of the curve.

As new applications emerged, vacuum tubes became more complicated, adding more control elements -- even combining the functions of several different tubes in the same envelope. By placing a shaped metal shield near the cathode, electron emission is directed into a beam to maximize power transfer. Tubes with this feature are called **beam power amplifiers**.

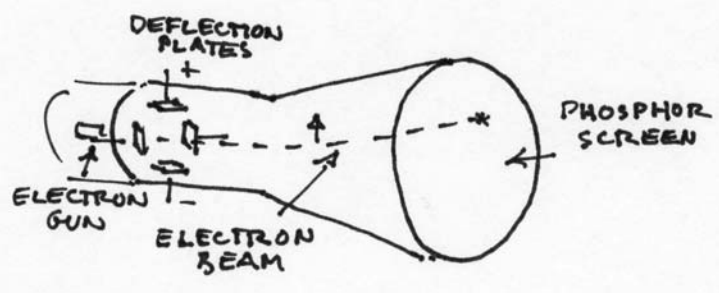
In every vacuum tube, there is a small capacitance between the control grid and the plate that can become troublesome at high frequencies so an extra **screen grid** is often introduced near the plate and connected to the cathode to reduce the effect of capacitance. This sort of tube is called a **tetrode**. More grids can be introduced to mix signals from different sources The combinations are seemingly endless as tubes go from **triode** to **tetrode**, to **heptode**, to **pentode**, and ever onward.



(Fig-4)

You're probably wondering why I'm telling you all this. It's probably more than you want to hear about these dinosaurs of a bygone era but before you dismiss them entirely, vacuum tubes are alive and well in high power RF amplifiers and in a lot of other not-so-ancient equipment. Besides, you might find yourself troubleshooting your grandmother's *Atwater Kent* radio someday or restoring an old "boat anchor" transmitter. Just be careful. Unlike today's 12 volt transistor radios, Vacuum tubes use high voltages -- from a hundreds to thousand of volts. This is especially true in oscilloscopes and television sets -- anything that uses a **cathode ray tube** for display.

The cathode ray tube **(CRT)** is a specialized vacuum tube that incorporates an **electron gun** and horizontal and vertical **deflection plates**. There is no plate to collect the emitted electrons. Instead, they are focused into a tight **beam** and accelerated to collide with a phosphorescent screen to ionize the phosphor atoms, which, in turn, re-combine to emit visible light.



(Fig-5)

Signals applied to the horizontal and vertical plates electrostatically deflect the electron beam to position it on the screen. In the case of a television monitor, the deflection plates are replaced with external coils that deflect the beam electromagnetically. Typically,

these tubes operate with the cathode at an extreme negative potential, in the order of 3000 volts, which means that any circuit components associated with them also "float" below ground at the cathode potential. If you're not used to working with high voltages, it's best not to attempt any service on these circuits as your first mistake could be your last!

A separate class of specialized vacuum tubes are gas-filled. They are used as visual indicators, switches, high current rectifiers and voltage regulators. In these tubes a small amount of gas, usually neon, argon, nitrogen or mercury vapor, is included within the envelope. When ionized, the gas allows very high currents to be conducted and they become relatively insensitive to changes in applied voltage. Schematically, the presence of gas is indicated by a solid dot inside the envelope. Gas-filled tubes used as regulators and indicators don't usually employ heated cathodes. These tubes are called **cold cathode** tubes.

(Fig-6)

In general, vacuum tubes are classified by type number such as 12SN7 or 5Y3, etc. The first number or number group indicates the filament voltage in round numbers. Rectifier tubes typically have 5 volt filaments and the rest operate on 6.3V or 12.6V, so a 5Y3 tube would have 5 volts applied to the filament to heat it. A 6SN7 would have a filament voltage of 6.3V and a 12AT7 would have a 12.6V filament, etc. Plate voltages are quite high and can vary from as little as 45V to several thousand volts so power supply transformers with multiple output windings are used to supply the necessary operating voltages in vacuum tube circuits. I'll discuss this in more detail in the unit on Power Supplies.

In this unit, I've shown how vacuum tubes function and described some common types of tubes. In the next unit, I'll introduce transistors

Terms to remember

Anode	**Attracts electrons**
Bias voltage	**Sets working range of a vacuum tube**
CRT	**Cathode ray tube**
Cathode	**Emits electrons**
Cold Cathode	**Cathode with no heating filament**
Control grid	**Regulates flow of electrons in a vacuum tube**
Cutoff	**Point below which cathode will not emit electrons**
Diode	**Allows flow of current in one direction only**
Electrons	**Mobile negative charges**
Filament / Heater	**Heats the cathode to "boil off" electrons**
Saturation	**Point at which maximum current flow is reached**
Screen grid	**Grid used to reduce interelectrode capacitance**
Space charge	**Electrons hovering in the vicinity of the cathode**

Paul Honore' W6IAM

CLALLAM COUNTY AMATEUR RADIO CLUB
BOARD OF DIRECTORS MEETING
NOVEMBER 6, 2008

Board members and officers present: Tom Newcomb KE7XX, Rich Golding N7NCN, Chuck Jones N7BV, Bill Carter W7WEC, Bob Sampson K6MBY. Visitor present: Shirley Newcomb.

The meeting was called to order at 1:55 PM by Tom Newcomb, Board President.

Minutes of the previous meeting were reviewed. They had been approved previously.

Chuck reported that a repeater committee has been formed. However, Paul WB8BVK has resigned as head of it.
K7PP has made known that he will be pulling his repeater(s) out of the Ellis Mountain location, and CCARC is second in line for obtaining the frequencies if no entity in Forks asks for it.

Tom reported that Bob Kennedy will resign from the Board due to health problems.

There was discussion regarding who might be asked to be the repeater committee head, and who should be recommended by the Board as President and Vice-president next year.

There was discussion regarding selection of "Ham of the Year."

Last year's club budget was reviewed and modifications made for next year.

After some discussion, it was moved that the club treasurer be approached to determine if he would like to have a specific accounting program for doing the club budget, with a $100 limit. Seconded and carried. Assigned to Chuck.

A list was created to facilitate creation of a "table of recurring tasks" that must be completed regularly, such as license renewal, insurance renewal, permits, et al. The need for regular physical inspection of the repeater site equipment was recognized and will be included in the table.

There was discussion about the club's generator, and it was moved that the club sell the generator for the best offer over $50.00 (it will be advertised in QTC), and further, that the club will not replace it. Seconded and carried.

Continued:

It was moved to adjourn the meeting. Seconded and carried. Adjourned at 3:10 PM

Minutes by Rich Golding

FOR SALE OR TRADE

~ ~ ~ ~ ~ ~ ~ ~

I am looking for work on weekends and after school (2:30) to make money. I can be reached at (360)452-6614 or ke7lka@yahoo.com Thanks, Jody

~ ~ ~ ~ ~ ~ ~ ~

2m/440 dual band J-pole antenna. Excellent antenna and price $20. Similar to http://arrow-antenna.com/j-pole.html Made by KN7R. Proceeds to ARES. Chuck, N7BV

~ ~ ~ ~ ~ ~ ~ ~

CLALLAM COUNTY AMATEUR RADIO CLUB
Minutes of the General Meeting October 8, 2008

The meeting was called to order at 7:00 P.M. by club president, Chuck, N7BV.

The Pledge of Allegiance was given, then introductions were made around.

It was moved and seconded that last months meeting minutes be approved as published. Motion carried.

The VE session report was given: There were three new General Class licensees, one Extra Class, and eight new Technician Class. There were no failures.

Chuck N7BV responded to previously expressed concern about the LDS group's use of the repeater. He advised that the LDS folks are paying more in dues than Public Service users, and it was noted that the LDS Church donated $500.00 to the club around the year 2000.

Leah KE7EZS announced the Christmas Potluck will be held December 14th, from 1:00 PM until 3:00 or 4:00 PM. The location will be at St. Andrews Episcopal Church in Port Angeles. There will be a $5.00 maximum gift exchange.
(It was noted that the potluck alternates between Port Angeles and Sequim each year.)

There will be a regular club meeting in December, as that is club elections. Nominations will be made in November.

There was discussion about the repeater, resulting in the motion that the club form a repeater committee. Seconded and carried. The committee members: Paul WB8BVK as head, with Steve KA6SLT, Bob K6MBY, David KE7TTT, Carol KE7OMR, Lee KE7TTY, and Dennis AD7TV.

The program for the evening was given by Bill W7WEC, "Why do we have all of these Digital Modes?" He explained the nature of digital signals, bandwidth, etc. He suggested that PSK31 is a good starting place to enter the world of Digital radio.

From Chuck: The budget for next year is to be done by December. Board members would like to receive suggestions from any member, as to who should receive the Annual Service Award. Bob AC7RK is seriously ill. The club has aggressively collected dues and built up its funds to (primarily) support expansion and improvement of the repeater.

Paul W6IAM asked that the club donate to the ARRL School Fund. It was then moved that the club donate $100.00 annually to the ARRL School Fund, at the discretion of the Board.

There was discussion about options for publishing the 2009 membership list. In discussion it was noted that David KE7JEJ is publishing the membership quarterly and sending it to members via e-mail in a PDF format. It was moved and seconded that the club not publish a printed directory anymore. Seconded and carried.

It was moved that the meeting be adjourned. Seconded and carried. Adjourned at 8:37 PM.

There were 28 members and guests present.

Minutes by Rich N7NCN.

Picture of Ward Silver, N0AX at the June meeting.

His presentation on Antennas was of great interest.

Thanks to Bob Kennedy, AC7RK

Vibroplex "Original" Bug, w/original box, vintage ~ 1948 at The Trading Post (in Port Angeles), tagged for $165, Ser # 157629

http://vibroplex.com/date_your_vibroplex.html

See Brian Shaw

David, KE7JEJ

Birthdays for November and the first week of December:

Blatter, Wilburt	KN7R	Nov-02
Gallauher, Don Theron	W7DTG	Nov-04
Lawson, Matthew J.	KC7EQO	Nov-08
Tilton, Dennis	AD7TV	Nov-10
Steelman, Roger	W7GRS	Nov-15
Kroll, James N.	KB7QFI	Nov-19
Honore, Paul	W6IAM	Nov-20
Stroeher, Joyce	N7JPW	Nov-30
Gilbert, Ray	K7VQF	Dec-09

YL's Birthdays:

McCoy, Susanne H. (& David R.)	KE7JEJ	Nov-06
Wilkinson, Isabel (& Herb D.)	KA7PXL	Nov-12
Schildknecht, Diana (& Mark C.)	KE7VFR	Nov-20
Brown, Sue (& Steve)	NL7US	Nov-26

YL LUNCHEON

November 14th Chestnut Cottage
929 E. Front Street
Port Angles
Time: 11:30 a.m.

Find us on the web at
www.olyham.com
Check it out. Lots of information about ham radio in Clallam County!

From our Treasurer, David, KE7JEJ as of October 31st:

First Federal Savings & Loan of Port Angeles Balance is:	$ 2,210.69
Outstanding Checks:	- 0.00
Current Book Balance:	**$ 2,210.69**
CD at WestSound Bank (6-month, 2.50% APY):	+ 1,025.04
CD at WestSound Bank (18-Month, 5.13% APY):	+ 3,000.00
Total Cash Assets:	**$ 6,235.73**

Description	Time/Date	Location	Contact
Clallam County ARES/RACES meeting	7 pm, first Tue of every month	Clallam County Courthouse EOC, 223 E. 4th St., PA	Chuck Jones N7BV 360-452-4672
Clallam County Amateur Radio Club general meeting	7 pm, second Wed of every month	Port Angeles Fire Station 5th & Laurel Streets, PA	Tom Newcomb KE7XX 360-452-8228
Clallam County Amateur Radio Club social breakfast	8 am, first Sat of every month	Joshua's Restaurant Hwy. 101 & Del Guzzi Dr.	Tom Newcomb KE7XX 360-452-8228
Clallam Country Amateur Radio Club YL social lunch	11:45 am 2d Fri of every month	Rotates - announced on Thursday night Net	

CLUB OFFICERS For 2008

President:	Chuck Jones N7BV	360-452-4672	n7bv@yahoo.com
Vice President:	Bob Sampson K6MBY	360-582-9116	k6mby@olypen.com
Secretary:	Rich Golding N7NCN	360-683-9309	n7ncn@myfam.com
Treasurer:	David McCoy, KE7JEJ	360-461-5470	mccoy.d.r@olypen.com
Chairman of the Board:	Tom Newcomb	360-452-8228	ke7xx@arrl.net
Board Member:	Bob Kennedy AC7RK	360-457-6177	ark@wavecable.com
Board Member:	Bill Carter W7WEC	360-681-4375	bcarter@olypen.com