

CLALLAM COUNTY AMATEUR RADIO CLUB

QTC
MAY 09

DRT's Shack:

Seems to me this year is going by just a little too fast. We all have the out door chores to tend to, and if we don't, we sure pay for it with the dandelions and other weeds taking over. The mowing, planting flowers, vegetable gardens, all sure to keep us each busy until that first frost.

While out weeding, I figured since I'm so close, I should check my ground wires to make sure no critters had chewed through the insulation, and basically make sure everything was up to par.

While I found no problems, I thought this would be a good time to remind everyone to do the same. Check on all your coax, fittings, guys, grounds, and make sure things are secure, tight, and in good shape. Inside and out. Any loss of RF is too much, and it's difficult to accurately evaluate the effects of RF radiation exposure in the near field. Just sitting in your shack close to a power supply or linear amplifier can cause trouble, so make sure those fittings are tight and secure. Rule of thumb, stay at least 24 inches away from sources of high-level 60 Hz magnetic fields. Potential exposure situations should be taken seriously, so follow the FCC/EPA RF Awareness Guidelines. These can be found on the ARRL website, and your Technician study book. Talk to some who has had RF burns. Being safe and learning from their experience should be all it takes. I hope!!

Don't forget the Club meeting will be held at OMC, in the Linkletter Hall in the basement.

Normal time, 7PM, and there's plenty of chairs, so lets all try to be seated and ready to start the monthly meeting on time, as we have a great agenda.

I've not been told of a guest, however, we do have the room to get familiar with, vote on if this is where we want to continue, plus, much to talk about for Field Day.

Matt Lawson, KE7EQO, is FIELD DAY CHAIR, so please take all suggestions and concerns to him. If you have time to help him with organization, he's waiting for your call. Since this is the biggest event for the Club each year, let's all give above and beyond to make this a successful Field Day

One important thing: let not one new HAM pass by your station with out asking them to come help, learn, and make contacts. Our dedicated team of VE's did a terrific job, as usual, so with the upgrades and NEW Technicians, lets get them involved and on the air. After all, we ARE the best in the region, so lets prove it again by giving them an experience they'll return to year after year!

I hope it's not too late, but if you haven't placed you orders on Pins, T-Shirts, etc, with Bob Sampson, K6MBY, do so now. Last year they *sold out* of shirts. Hope we get all orders placed and no one is with out this year!

Until the meeting, 73
Nita Lyman
KE7DRT
CCARC President

Get Your License Here!

Our VE-exam on 2 May went well. The final tallies were four new Technicians and ten new General Class licenses.

Our next planned Training classes and Exam is in September. If you know of someone, or want to upgrade before then please call Chuck, N7BV 360-452-4672 or Tom, KE7XX 360-452-8228.

Thanks, Chuck, N7BV VE-L

The Pacific Northwest DX Convention has been held each summer since 1955 with the sponsorship rotating between the Willamette Valley DX Club (WVDXC), British Columbia DX Club (BCDXC), and the Western Washington DX Club (WWDXC). The Spokane DX Association (SDXA) was added to the rotation in 2007. The privilege of hosting the 54th annual DX Convention rests with the Spokane DX Association.

The convention will be held the weekend of August 7-9, 2009 in Spokane Valley, WA at the Mirabeau Park Hotel and Convention Center. The convention has been approved as an ARRL Operating Specialty Convention under the sponsorship of the Spokane DX Association. See more detail at our website:

<http://mysite.verizon.net/rbfoltz/sdxa/index.htm>

We need articles for the QTC newsletter. This is 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 we have to think of.

Thanks, the staff!

CCARC QTC Newsletter

Just a little back round on the QTC.

We use ccarcqtq@yahoo.com as a repository for information for the newsletter. So if you have something for the QTC, please send it to the yahoo address. Do not sent it to one of the editors as they will just have to turn around and resend it to the yahoo address.

Please make sure the article or information is complete. As we rotate editing the newsletter you cannot be sure which editor will be piecing the newsletter together.

Please remove as much formatting from within whatever program you are using (MSword, edit, clear, formatting) if you know how, before sending it to ccarcqtq. If you feel the creative urge to design a document—please open a design shop, but don't do it and then send it to us expecting to see your creative work transferred to the newsletter.

We do not edit, except to change fonts to a standard non-serif font (Arial which is easier to read than Times Roman). We will run a spell checker.

When first conceived the editors were given free license, it still is that way. It was understood they would endeavor to include everything submitted, within reason. For instance, off color jokes etc are not going to be printed.

Thanks,
Chuck, N7BV Bob K6MBY

**PROGRAM FOR
March 11th****Field Day 2009****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.

Are you operating with in your license class??

We all like the idea of getting that DX station, but at what cost? As I review the Advisory Cards sent out by our Official Observer Program, I am amazed at the General Class stations that are operating in the Extra Class portion of the band and further amazed at the number of Technician Class licenses that are also down in those portions and even checking in on HF Traffic Nets!

Is it worth a ticket or possibly being sanctioned by the FCC just to get that DX station or just to say "I checked in on this or that Traffic Net"?

Let's be more conscious of our License Class and the privileges granted to that class. If you want to check in on the HF Traffic Nets, then upgrade to at least General; and if you want to chase that DX at the bottom of the band, then upgrade to Extra. Let's show that we can have fun without breaking Federal Law.

ARRL Western Washington Section
Section Manager: James David Pace, K7CEX
k7cex@arrl.org

The following ARRL article about frequency measuring should help those that are confused as to how to "stay in the band".

<http://www.arrl.org/w1aw/fmt/2005/05fmtsilver.pdf>

On the second page of the article is this statement: "with the transmitted sideband *below* the carrier frequency. For example, if you're transmitting on LSB with the frequency display showing 7.151 MHz, your actual signal is mostly out of the phone band!"

Be careful of sub-band edges.

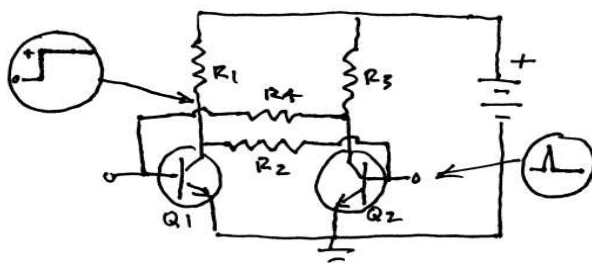
73, Chuck N7BV

Electronic Fundamentals, Part-1 (*Analog Circuits*)

Unit-14 Function generators

Often, there is a need for special waveforms to synchronize and control events, for instance, initiation of the timed sweep of an electron beam in a Cathode Ray Tube oscilloscope, or for the raster generation of a television picture. These things are accomplished using function generators that produce timed pulses, square waves, saw tooth waves and the like. Nowadays, they are likely to be built from specially designed integrated circuits or synthesized using software controlled digital techniques but, in their simplest form, function generators are based on the timed charge and discharge of a capacitor as I explained in Unit-5 of this series.

One such device is the square-wave generator or multivibrator. It can be built using vacuum tubes, transistors, or integrated circuits. Let's take a look at an example using a pair of NPN transistors.



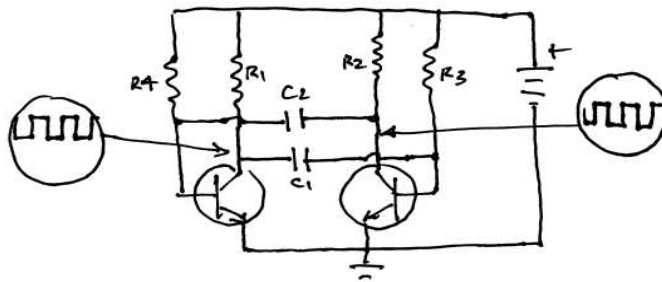
(Fig 14-1)

The transistors are cross-connected so that each transistor feeds an output signal to the input of the other. This particular circuit is called a **bi-stable** or **one-shot multivibrator**. Even if the resistors and the transistors are "perfectly matched", there will always be slight differences between them. enough so that when voltage is first applied, one transistor will begin to draw current ahead of the other. Therefore it isn't possible to predict what the output state of the multivibrator will be when it is first switched on. For the sake of argument, let's assume the left hand transistor, Q1, is first to conduct. Since the emitter is at ground potential when Q1 is conducting, the collector will be pulled toward ground, producing a voltage drop across resistor, R1. The junction between R1 and R2 is the source voltage for the base of transistor Q2. Since the source voltage, and therefore the voltage at the base of Q2 is pulled toward ground by the conduction of Q1, Q2 will be cut off. No current will flow through R3 so the voltage at the junction of R3 and R4 will be positive, The transistors will remain in this state until Q2 receives a positive "trigger" pulse at its base.

Now, let's apply a positive pulse to the base of Q2. Q2 will be forced to conduct, pulling the junction of R3 and R4 toward ground and cutting off conduction of Q1. Once more, the transistors will remain in this state until a positive pulse is applied to the base of Q1, which will switch the transistors back to their original states --- and so on.

If we bias *both* transistor bases to the positive supply voltage and provide capacitive feedback between them, the circuit can be made to oscillate or **free-run**. After turn-on, the slightest instability or voltage transient will start the

multivibrator oscillating.



(Fig 14-2)

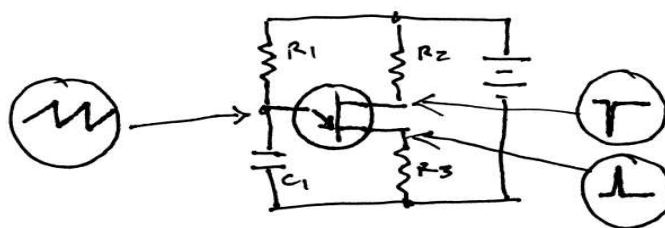
the output of each transistor provides the switching voltage for the other. The rate at which it switches or oscillates is determined by the charging rate of the capacitors. If any element of the circuit is made to be variable, the on/off rate of the transistors will become asymmetrical. By this means, the multivibrator can be made into a **pulse-width modulator**.



(Fig 14-3)

A typical use for a pulse-width modulator is to control the regulation of a switching power supply.

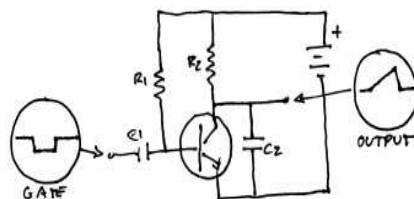
Often, a very short trigger pulse is required. A very narrow trigger pulse can be made using a uni-junction transistor.



(Fig 14-4)

Resistors R2 and R3, and the silicon material between bases 1 and 2, form a voltage divider. The voltage at Base 2, will determine the point at which the transistor switches into conduction. Capacitor C1 begins to charge through resistor R1. When the charge reaches the voltage at base 2, the transistor "avalanches" and quickly discharges the capacitor. The transistor then switches off and the cycle repeats itself. The switching rate will depend on the values of R1 and C1. If the output is taken at Base 1, the pulse will be negative. If taken at Base 2, it will be positive. The capacitor charge/discharge waveform at the emitter is a saw tooth, and, depending on the values of R2 and R3, can be quite linear.

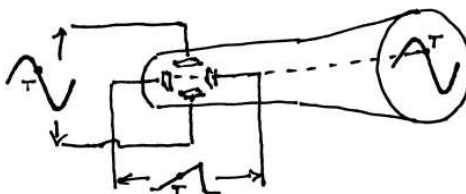
A typical use for a saw tooth waveform is the generation of a horizontal sweep in an oscilloscope. A triggered or **one-shot** multivibrator is usually used so that the sweep can be synchronized with the waveform it is displaying.



(Fig 14-5)

Resistor R1 biases the transistor base positively causing the transistor to conduct. In this condition, the collector is held near ground potential, shorting any charge across capacitor C2. When a negative voltage is applied to the transistor base, the transistor stops conducting and the collector is drawn toward the positive supply voltage, allowing capacitor C2 to charge through resistor R2. If the negative gate voltage is removed from the transistor base, the transistor begins to conduct again, shorting capacitor C2 and rapidly discharging it.

When a saw tooth voltage is applied to the horizontal plates of a Cathode Ray Tube, (CRT), the beam will be deflected from left to right at a rate equal to the charge time of the capacitor, sweeping back rapidly from right to left during the capacitor discharge time.



(Fig 14-6)

in actuality, the return sweep is "blanked out" by a reverse bias on the CRT grid during the very short time it takes for the beam to return to its starting point.

Any signal applied to the vertical plates will cause the beam to be deflected from its horizontal path, producing a pictorial representation of the applied waveform.

There are other ways to shape and control waveforms but these are some of the more common. In this unit I've described the some function generators. Before moving on to transmitters and modulation techniques, we'll take a side-trip to discover how an oscilloscope is used as a test instrument.

Terms to remember

Multivibrator

One-shot

Bi-stable

Free running

Saw tooth

Square wave

Pulse

Oscillator producing a square wave output

Single output cycle triggered by input pulse

Alternates output states when triggered

Self triggering oscillation

Gradually increasing output with sharp cutoff

Waveform with a square or rectangular shape

Positive or negative voltage of very short duration

Electronic Fundamentals Part-2, (*Digital circuits*) Unit-3 (Gates and Flip-Flops)

Circuits to encode, decode, switch and route digital signals can be fabricated from discrete components but these days it 's hardly worth the effort. Standardized circuits are available in microchip form to do just about any job you can name. They are tiny, cheap, and reliable.

An important class of digital “building blocks” is called **gates**. As the name implies, a gate is a device that will let a signal pass or not, depending on a pre-determined set of conditions. There are a lot of specialized variations but the four basic types of gate are called **AND**, **NAND (Not AND)**, **OR**, and **NOR (Not OR)**. These gates typically have two inputs and one output. Let's look at each of them in turn.

The schematic symbol for an **AND** gate, and its “truth table” look like this

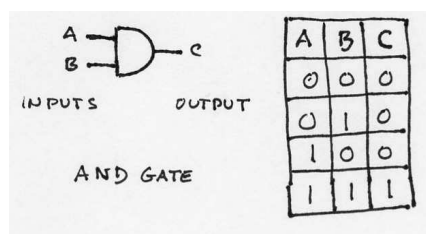


Fig 3-1

The truth table shows the resultant output at lead “C” for any combination of signals at the inputs “A” and “B”. An output of “1” will be realized *if, and only if* **both** “A” and “B” see signals of “1”. In other words “A” **and** “B” must both be “1” to get an output of “1”.

As you might expect, the **NAND** gate is the reciprocal of the AND gate. Its schematic symbol and truth table look like this

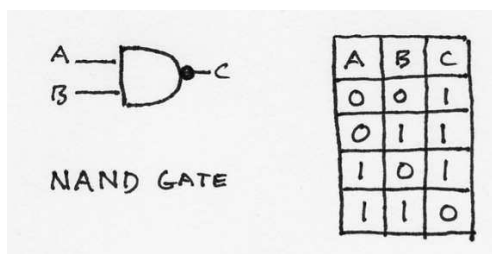


Fig 3-2

The **OR** gate provides an output of “1” if *either* the A or the B inputs see a signal of “1”

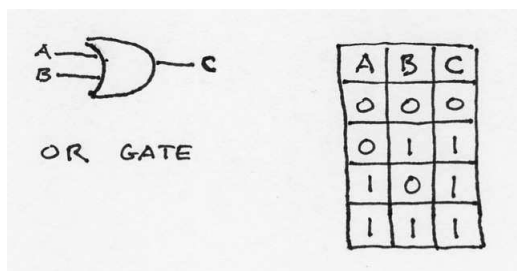


Fig 3-3

The **NOR** gate is the opposite of the OR gate.

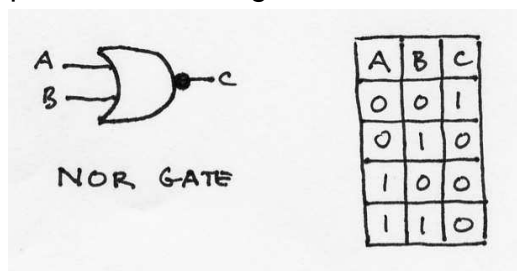


Fig 3-4

As the truth table shows, an output of "1" will be seen *if and only if* **both** the A and B input signals are "0"

Okay, gates give us a way to combine binary signals but we need a couple of more "building blocks" to put them to work. One such building block is the **clock**, used to synchronize the operation of the various digital "building blocks". It is usually a very stable crystal oscillator with an output pulse that has very steep rise and fall times.

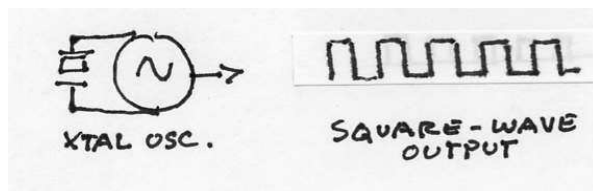


Fig 3-5

Crystal oscillators were discussed in Part 1 (Analog Circuits) so I won't go into the circuit details here, except to say that in most digital applications, the frequency of the clock output is usually very high in order to obtain a large number of samples of a given waveform. Remember, the larger the number of samples per cycle of a waveform, the more detailed the information. At least ten samples per cycle of the highest frequency is considered to be enough to get a reasonable digital "snapshot" of the waveform. That means, if we want to sample and digitize a waveform that has 1 MHz as its highest frequency, we must have a clock frequency of at least 10 MHz.

Another basic building block in the arsenal of digital circuits is the **flip-flop** or multivibrator. If you studied Part-1 (Analog Circuits), you'll recognize the basic flip flop circuit consisting, in this case, of a pair of AND gates cross wired so that they trigger each other alternately to make a

free-running multivibrator. The “S” and “R” inputs are Set and Reset and the “O” and “O-prime” outputs represent opposite binary levels for the two gates at any given state.

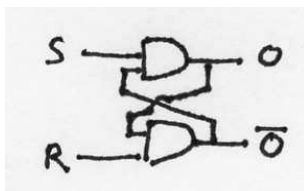


Fig 3-6

Two kinds of standardized flip-flops are in general use. They are the “D” flip flop, used primarily as a storage device, and the “JK” flip flop, which has an additional input, allowing it to adapt to a number of specialized applications. The schematic symbols for the D and JK flip flops look like this.

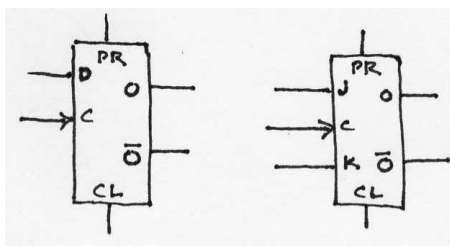


Fig 3-7

The D flip flop has only one logic **D** input but it has two extra inputs for Preset and Clear signals. The **C** input is for the clock. With this type of flip-flop, a binary signal is introduced at the D input but nothing happens at the outputs until a clock pulse is applied. In the case of the J K flip-flop, the outputs will change state *only* if appropriate binary signals are applied to the J and K inputs and a clock pulse is seen.

A lot of useful circuits can be synthesized using flip-flops. By cascading them and utilizing the PRESET and CLEAR functions, you can build timers, counters, registers, and half a hundred other digital building blocks. In the next unit, we'll take a look at Storage registers and Shift Registers.

Terms to remember

AND gate	A two input logic gate ($1A+1B=1C$)
NAND gate <i>Not AND</i>	A two input logic gate ($1A+1B=0C$)
OR gate	A two input logic gate ($1A \text{ or } 1B=1C$)
NOR gate <i>Not OR</i>	A two input logic gate ($1A \text{ or } 1B=0C$)
Flip-Flop	Bi-stable multivibrator
D Flip Flop	Single input multivibrator
JK Flip-Flop	Two input multivibrator

Paul Honore' W6IAM

(Rev-2 Apr '09)

Some pictures from our recent Technician/General class sessions:



Bob, AC7RK demoing a VOM



Chuck, N7BV: Antennas and Propagation



Tom, KE7XX: Explaining a hand key



Trying an electronic keyer for the first time!



First Day, getting started. Johan, KO6I on deck.

Pictures courtesy of Becky, W7RJW

FOR SALE OR TRADE

~ ~ ~ ~ ~ ~ ~ ~

KG6GBB a visitor to our area is looking for old transmit tubes. Please call him at 916-761-1542 if you have any to sell or donate.

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FOR SALE:

ICOM IC-211 Synthesized Xceiver
2 Mtr SSB, FM, CW.
10W. Jim Cloud WA7LDM 457-9299

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Your Ad Could Go Here

Clallam County Amateur Radio Emergency Service (CCARES)

The Clallam County ARES is organized in two levels; as an affiliate of ARRL/ARES and as the recognized RACES organization by the Clallam County Division of Emergency Management. Membership in CCARES is open to all licensed Amateur Radio Operators that are residents of Clallam County, who first register with ARRL/ARES through the Emergency Coordinator. They are not required to attend training meetings and function as a second response unit in emergencies.

CCARES members in good standing may register in the RACES program with the Clallam County Division of Emergency Management (CCEM) and serve as a primary responder during emergencies. RACES members are the core of the organization and are expected to attend training meetings and participate in drills and other events.

FROM OUR TREASURER:

As of April 30th, 2009:

First Federal Savings & Loan of Port Angeles Balance:	\$ 3,425.22
Outstanding Cheques:	0.00
Current Book Balance:	\$ 3,425.22
CD at WestSound Bank (6-month, 3.40% APY):	+ 1,037.74
CD at WestSound Bank (18-Month, 5.13% APY):	+ 3,000.00
Total Cash Assets:	\$ 7,462.96

David R. McCoy,
 KE7JEJ
 CC-ARC Treasurer

BIRTHDAYS:

Birthdays for June, and the first week of July,:

Jody	KE7LKA	May-07
Bill	W7WEC	May-14
John	W6SU	May-21
Bob	KI7ZC	May-28
Jan	N7JAN	Jun-02
Rich	N7NCN	Jun-05

YL's Birthdays:

Barbara (John K7NIA)	May-17
Genevieve (Lew WB0NAI)	May-30
Karen (Chuck N7BV)	Jun-05
Joanne (John A. W6SU)	Jun-06

Happy Birthday!

COMING EVENTS

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 5-7 Jun 2009\*Northwestern Division Convention  
 (SeaPac)  
 Oregon Tualatin Valley ARC  
<http://www.seapac.org>

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 HAMFEST: 8 Aug 2009+Radio Club of Tacoma
<http://W7DK.org>

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**CLALLAM COUNTY RADIO CLUB  
Minutes of the General Meeting April 8,  
2009**

The meeting was called to order at 7:04 P.M. by club president, Nita, KE7DRT.

The Pledge of Allegiance was given.

Self introductions were made by those present.

Announcements: Nita announced that instead of having a speaker, this meeting would be to discuss:

(1) Moving our meeting location from the Fire Dept room where we meet now to the OMH Linkletter Room

(2) Field Day

LINKLETTER ROOM DISCUSSION: Positive features of the room include 69 comfortable seats, internet access, whiteboard, projector and screen. The only negative is that we cannot use radios in it. It also has wheelchair access. A motion was previously passed to hold the May meeting there, which will be May 13. Nita did not get any response from the article and picture in the QTC. We will vote on whether or not to change our meeting place after the May meeting but the exact timing and method of voting has not been decided.

FIELD DAY DISCUSSION: Nita asked Chuck, N7BV, what equipment the club has. He said the club has a tent and a vertical antenna. He also brought his own last year but it might not be available this year. Nita asked if we had a tent for GOTA and that is not clear at this time. Tom, KE7XX, said he could help out part time with the GOTA tent. Paul, W6IAM, would like a tent and better visibility for ARES.

The following were the main points of the discussion:

The goal last year was to have the maximum number of stations and frequencies working but there were too few operators to keep everything on the air for 24 hours. This was disappointing to the people who worked very hard to set up everything. Suggestions were made that maybe we should cut back on the number of stations and have a sheet for operators to sign up for certain hours to work the radios.

ARES will be represented by the CVS and there are plans for an exhibit and personal equipment demonstrations.

We need signs on all the exhibits to tell the public what they are and what the people are doing.

Above all else, we need to know who is going to bring what equipment. We need to coordinate everything with Matt, KC7EQO, so we will know what additional equipment is needed.

Lee, KE7TTY  
CCARC Secretary

**NEXT YL LUNCHEON**

June 12th  
Mariner in Sequim

Time: 11:45 a.m.

**2009 YL Luncheons:**

June - Mariner - 707 E. Washington - Sequim  
 July - Joshuas - 113 DelGuzzi Dr. - Port Angeles  
 August - Tarcisios - 609 W. Washington - Sequim  
 September - Sergios - 205 E. 8th - Port Angeles  
 October - Fortune Star -145 E. Washington - Sequim  
 November - Chestnut Cottage - 929 E. Front - PA  
 December - Paradise - 703 S. Sequim Ave. - Sequim

**Find us on the web at  
[www.olyham.com](http://www.olyham.com)  
 Check it out. Lots of  
 information about ham radio  
 in Clallam County!**

| Description                                        | Time/Date                       | Location                                                          | Contact                           |
|----------------------------------------------------|---------------------------------|-------------------------------------------------------------------|-----------------------------------|
| Clallam County ARES/RACES meeting                  | 7 pm, first Tue of every month  | Clallam County Courthouse EOC,<br>223 E. 4 <sup>th</sup> St., PA  | Dan Abbott N7DWA<br>360-582-3824  |
| Clallam County Amateur Radio Club general meeting  | 7 pm, second Wed of every month | Port Angeles Fire Station<br>5 <sup>th</sup> & Laurel Streets, PA | Tom Newcomb KE7XX<br>360-452-8228 |
| Clallam County Amateur Radio Club social breakfast | 8 am, first Sat of every month  | Joshua's Restaurant<br>Hwy. 101 & Del Guzzi Dr.                   | Tom Newcomb KE7XX<br>360-452-8228 |
| Clallam County Amateur Radio Club YL social lunch  | 11:45 am 2d Fri of every month  | Rotates - announced on Thursday<br>night Net                      |                                   |

**CLUB OFFICERS For 2009**

**President:** Nita Lyman KE7DRT 360-457-5022 [Nita\\_lyman@yahoo.com](mailto:Nita_lyman@yahoo.com)  
**Vice President:** Dennis Tilton AC7TV 360-452-1217 [3tiltons@wavecable.com](mailto:3tiltons@wavecable.com)  
**Secretary:** Lee Diemer KE7TTY 360-683-5102 [pathfindernorth@aol.com](mailto:pathfindernorth@aol.com)  
**Treasurer:** David McCoy KE7JEJ 360-457-8550 [mccoy.d.r@olypen.com](mailto:mccoy.d.r@olypen.com)  
**Board Member (Chairman):** Bill Carter W7WEC 360-6814375 [w7wec@arrl.net](mailto:w7wec@arrl.net)  
**Board Member:** Johan Van Nimwegen KO6I 360-681-7300 [jvn@olypen.com](mailto:jvn@olypen.com)  
**Board Member:** Al Dawson W7YLV 360-457-0752 [adawson@tfon.com](mailto:adawson@tfon.com)