
SEPTEMBER 11
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CLALLAM COUNTY AMATEUR RADIO CLUB

QTC

SEPTEMBER 09

DRT's Shack:

Hi CCARC Members,

If every one has had a month like I've had, there's so much to talk about it's hard to figure out where to start. It amazes me to think September is here, with proof in the turning of the leaves, the cooler evening temps, morning dew, and now the rain. What a blessing in disguise this rain actually is, as that hose seems to get heavier each time I pull it, especially with a dog playing tug of war, pulling it in the opposite direction. So here's to pulling it, alone, into the garage one last time until Spring 2010.

We have some members who have need for extra well wishes for a speedy recovery, so please keep them in your thoughts and prayers, and offer assistance if the need arises. Remembering our Ham families needs by showing we care with acts of kindness keeps us all together with an out stretched hand. To use words we're all familiar with, "Ask not what our Club can do for us, but what *we* can do for our Club". Remember, our members *are* the Club!!

In case some aren't aware, our very own N7BV, Chuck Jones, took FIRST PLACE in the 2008 ARRL IARU Contest Western Washington Division. All Hams who participated at his QTH also received Certificates, which must be an honor in itself, so CONGRATULATIONS Chuck and others who partook, and thank you Chuck for inviting up, Elmering, and feeding those who worked hard on the air to accomplish this great achievement! It's one I worked this year at his QTH, learning the tricks of the trade, so to all who want to take their radio experience a step further, contesting is a lot of fun, very comparable to Field Day, but without the "field". Ham Radio offers more then just the local net, as so many of you know, but contesting is an adventure, and I'm already looking forward to the next chance to improve the skill !

The team who brings us monthly meeting programs has a great presentation for the September meeting on the 9Th. N7BV talks about this further in this QTC, so hope to see you all there, at OMC, 7PM, in the Linkletter Hall.

On closing, remember 9/11. Fly your flag proudly in remembrance of those lost on that horrific day, one I hope never comes to our shores again. This isn't about politics my friends, but rather about love of America, our great nation, and all those we lost.

I know I'll "Never forget"!! Thanks to our Editors for the front page of this months QTC!

See you on the 9Th!!
73,Nita KE7DRT
CCARC President

Get Your License Here!

The CCARC Amateur Radio License
Classes will be 0845-1700 Saturday September 19th & 26th Review on October 3d. Exam Session at 1300.

If you know of anyone who would be interested in a Technician or General Class license please have them call Chuck, N7BV 360-452-4672 or Tom, KE7XX 360-452-8228.

Thanks, Chuck, VE-L

This months program will be a visit to the Hygain rotor and antenna company and a discussion of Clandestine Voice Broadcasts. Some of you might remember we watch AmateurLogic TV's visit to MFJ's plant a year or two ago.

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 ccarcqtc@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 ccarcqtc. 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-serf font (Arial which is easer 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 September 9th

AmateurLogic.TV: Hygain & Clandestine Voice Broadcasts

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.

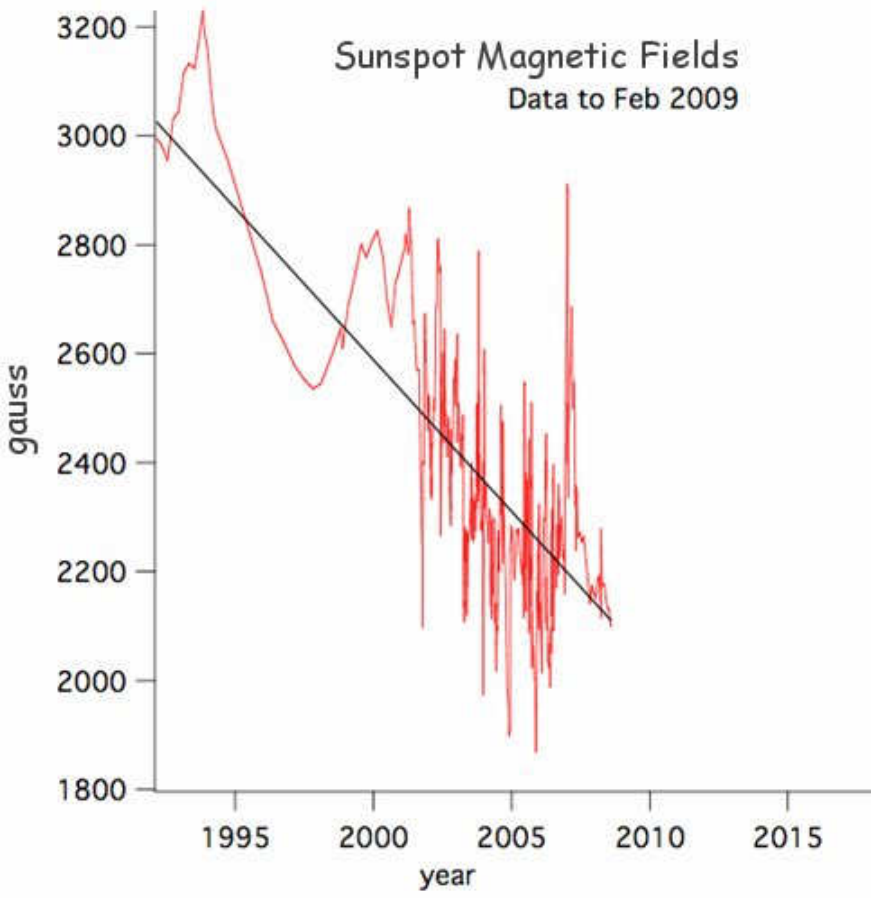
Are Sunspots Disappearing?

09.03.2009

September 3, 2009: The sun is in the pits of the deepest solar minimum in nearly a century. Weeks and sometimes whole months go by without even a single tiny sunspot. The quiet has dragged out for more than two years, prompting some observers to wonder, *are sunspots disappearing*?

"Personally, I'm betting that sunspots are coming back," says researcher Matt Penn of the National Solar Observatory (NSO) in Tucson, Arizona. But, he allows, "there is some evidence that they won't."

Penn's colleague Bill Livingston of the NSO has been measuring the magnetic fields of sunspots for the past 17 years, and he has found a remarkable trend. Sunspot magnetism is on the decline:



Above: Sunspot magnetic fields measured by Livingston and Penn from 1992 - Feb. 2009 using an infrared Zeeman splitting technique. [more]

"Sunspot magnetic fields are dropping by about 50 gauss per year," says Penn. "If we extrapolate this trend into the future, sunspots could completely vanish around the year 2015."

This disappearing act is possible because sunspots are made of magnetism. The "firmament" of a sunspot is not matter but rather a strong magnetic field that appears dark because it blocks the upflow of heat from the sun's interior. If Earth lost its magnetic field, the solid

planet would remain intact, but if a sunspot loses its magnetism, it ceases to exist.

"According to our measurements, sunspots seem to form only if the magnetic field is stronger than about 1500 gauss," says Livingston. "If the current trend continues, we'll hit that threshold in the near future, and solar magnetic fields would become too weak to form sunspots."

"This work has caused a sensation in the field of solar physics," comments NASA sunspot expert David Hathaway, who is not directly involved in the research. "It's controversial stuff."

The controversy is not about the data. "We know Livingston and Penn are excellent observers," says Hathaway. "The trend that they have discovered appears to be real." The part colleagues have trouble believing is the extrapolation. Hathaway notes that most of their data were taken *after* the maximum of Solar Cycle 23 (2000-2002) when sunspot activity naturally began to decline. "The drop in magnetic fields could be a normal aspect of the solar cycle and not a sign that sunspots are permanently vanishing."

Penn himself wonders about these points. "Our technique is relatively new and the data stretches back in time only 17 years. We could be observing a temporary downturn that will reverse itself."

The technique they're using was pioneered by Livingston at the McMath-Pierce solar telescope near Tucson. He looks at a spectral line emitted by iron atoms in the sun's atmosphere. Sunspot magnetic fields cause the line to split in two—an effect called "Zeeman splitting" after Dutch physicist Pieter Zeeman who discovered the phenomenon in the 19th century. The size of the split reveals the intensity of the magnetism.

Right: Zeeman splitting of spectral lines from a strongly-magnetized sunspot. [more] Astronomers have been measuring sunspot magnetic fields in this general way for nearly a century, but Livingston added a twist. While most researchers measure the splitting of spectral lines in the visible part of the sun's spectrum, Livingston decided to try an infra-red spectral line. Infrared lines are much more sensitive to the Zeeman effect and provide more accurate answers. Also, he dedicated himself to measuring a large number of sunspots—more than 900 between 1998 and 2005 alone. The combination of accuracy and numbers revealed the downturn.

If sunspots do go away, it wouldn't be the first time. In the 17th century, the sun plunged into a 70-year period of spotlessness known as the Maunder Minimum that still baffles scientists. The sunspot drought began in 1645 and lasted until 1715; during that time, some of the best astronomers in history (e.g., Cassini) monitored the sun and failed to count more than a few dozen sunspots per year, compared to the usual thousands.

"Whether [the current downturn] is an omen of long-term sunspot decline, analogous to the Maunder Minimum, remains to be seen," Livingston and Penn caution in a recent issue of EOS. "Other indications of solar activity suggest that sunspots must return in earnest within the next year."

Whatever happens, notes Hathaway, "the sun is behaving in an interesting way and I believe we're about to learn something new."

Author: Dr. Tony Phillips | Credit: Science@NASA

Win a YAESU FT-900 AT

(With Collins SSB Filter)

The **Yaesu FT-900** is a compact HF transceiver which features a detachable front sub-panel that can be mounted separately from the main body. This capability allows the FT-900 to be configured for maximum safety, best display visibility, and ease of operation in mobile installations. Perfect as a high-performance base station, the FT-900 quickly doubles as a full-featured mobile or field-day rig. The FT-900 provides up to 100 watts adjustable power output on all HF amateur bands in CW, SSB and FM modes, and up to 25 watts carrier in AM. General coverage reception is possible from 100 kHz to 30 MHz. The lightweight, detachable sub-panel permits separating the transceiver and mounting the main unit in a remote location. This enables you to keep the most commonly used front-panel controls and display where you need them. Four micro-processors are programmed to provide the simplest possible control interface for the operator. The 2x5 keypad also serves as a quick band select. Two independent (A/B) VFOs for each band hold their own frequencies and mode settings. 100 memories store all of this data for both VFOs, giving a total of 220 independent sets of frequency, mode and other selections. The rear panel features an SO-239 antenna jack and other I/O jacks.

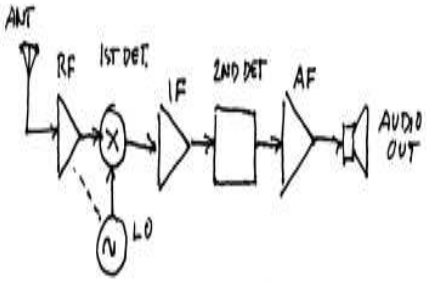
See David McCoy or a CCARC Board member to purchase a raffle ticket, $10 each. Raffle runs until 50 tickets are sold.

This radio was donated to the CCARC by Tod & Nancy Sloan of Sequim, in memory of Nancy's father, silent key N7OX, Richard Riddell of Vancouver, WA.

This history on this radio is that it is probably between 10 and 15 years old. It was repaired at the Yaesu factory repair center and never removed from the box when it was returned. The radio has been checked out by Paul Honoree, W6IAM, and works fine. Check out the reviews at www.eham.net/reviews/detail/146.

Electronic Fundamentals, Part-1 (Analog Circuits)
Unit-18 The AM radio receiver

When radio finally became a commercial reality, the 535 to 1605 KHz portion of the electromagnetic spectrum was allocated for AM broadcasting in the U.S. It has remained so to this day and is the frequency range tuned by your table model AM radio. Most radios built since the 1950s also incorporate FM in the 88-108 MHz range but, for the moment, we'll limit our discussion to the AM radio. Whether it contains vacuum tubes or transistors, it will almost certainly be a **superheterodyne** receiver. Don't let the fancy name throw you. It's made up from the common building blocks we've already studied. Only a few extra components have been added. Here's a block diagram of a typical "superhet"..



(Fig 18-1)

A signal from the antenna is amplified by an **RF stage** that incorporates a resonant tuning circuit to select a desired signal within the 535-1605 MHz frequency range. The RF stage does not alter the frequency of the carrier or the modulating envelope in any way. It simply selects a desired signal and amplifies it to a convenient working level.

From there, the signal goes to a **Mixer,** sometimes called a **First detector**. where it is combined or **heterodyned** with a signal from a **Local oscillator (LO),** sometimes called a **Beat-frequency oscillator (BFO),** to reduce the carrier to a constant 455 Hz intermediate frequency, **(IF).**

The **IF amplifier** is transformer coupled and tuned to a center IF frequency of 455 kHz. In effect, it is an active band-pass filter with a bandwidth of approximately 15KHz. .

Now, we come to the **second detector.** Its job is to strip the modulation envelope from the IF carrier and send it on to the audio stage.

The **Audio** stage is an amplifier designed to handle frequencies in the **20 - 20,000 Hz** range, usually a Class A or Class B amplifier with enough power to drive a loudspeaker.

Power for the receiver can either be a battery or a power supply operating from mains current. In the latter case, there is a subset of old vacuum tube radios called **AC-DC** radios. Remember, way back in Unit-2, I mentioned holdouts from the Edison era that power their homes and businesses with DC generators? There are still a few of these about, notably in parts of New York, Chicago, and Los Angeles. if you plug any device with an AC motor or transformer into one of these DC outlets, you'll get smoke or worse.

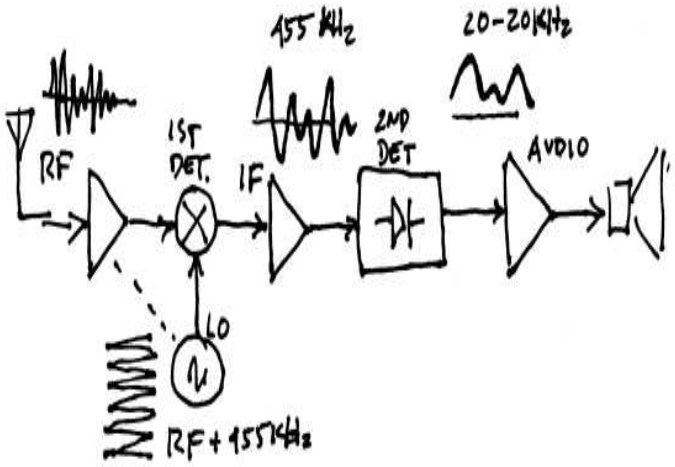
In an AC-DC radio, the power transformer is absent. 115V mains power is applied directly to the plate of the rectifier tube. It doesn't matter if the power source is AC or DC. If the voltage is AC, it is rectified and filtered in the usual way and supplied to the various tubes in the circuit. If the source is DC, current passes right through without affecting any of the power supply components. To get around having to step the voltage down to accommodate the vacuum tube filaments, the filaments are wired in series like a Christmas tree light string. The

tubes are chosen so that the sum of their filament voltages add up to 115 Volts. If one goes out, they all go out. Unless you have an ohmmeter, you have to substitute new tubes, one at a time, until the string lights again. I mention this only because there are a lot of 1930s vintage AC-DC radios out there and if you should get your hands on one you won't be totally mystified by it. .

In some of the cheaper sets, you'll find one vacuum tube doing the duty of three. Since the RF, IF, and AF signals are far apart in frequency, One pass through the tube would mix it with the signal from the LO. The resulting IF signal would then be feed back through the same tube where a diode detector would produce the requisite AF signal which was amplified In turn. -- all this in a single vacuum tube! How cheap can you get?

Another tricky way radio manufacturers had to cut costs was to use loudspeakers with **field coils** rather than fixed magnets. The field coil would then be used as the power supply filter choke, saving a couple of dollars in cost and half pound of weight.

Now, to summarize. Let's see how the radio signal is transformed as it travels from the antenna to the loudspeaker.

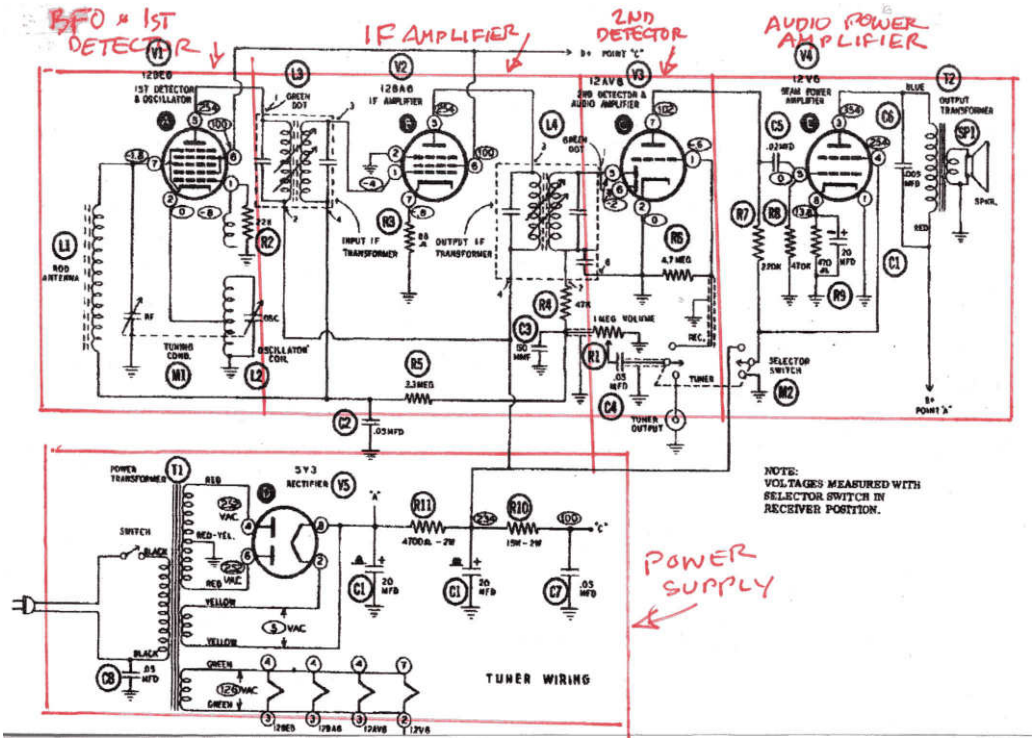


(Fig 18-2)

A tuning capacitor in the RF stage selects the desired signal and, at the same time, with the use of a second capacitor on the same mechanical shaft, tunes the Local Oscillator frequency to ensure it always puts out a signal that is 455 MHz above the frequency of the received signal. The mixer output is an AM modulated 455 KHz carrier. The IF signal is amplified and passed to a simple diode detector that strips the AM envelope from the carrier and passes it to the AF stage. The envelope contains audio in the approximate range of 50-750 Hz and is used to drive a loudspeaker or headphones. That's the simplified version, now, let's look at a real AM radio schematic to see how it compares.

Notice Notice Notice

Some time ago a Yahoo group, CCARCWA, was started as Chuck and I were seeking a way to better distribute the QTC. The Yahoo group did not work out well for distribution of the QTC but it does offer a unique way of communications for club members. If you have a Yahoo email address, or want to get one, go to the Yahoo Groups page and search for CCARCWA. Each email or post to CCARCWA goes to all members of the group and any, or all, members can respond. There is a file location where many field day pictures have been posted. If you would like further information on the group contact me at K6MBY at Olypen.com. 73, Bob K6MBY



(Fig 18-3)

In this particular radio there is no RF amplifier. The first tube in the circuit (12BE6), is a **penta-grid converter**, doubling as a 1st detector and Local Oscillator. Notice that the 2nd and 4th grids are tied to the high voltage (B+) supply. The 1st grid is the Local Oscillator input. .The RF tuning capacitor is coupled mechanically to the tuning capacitor in the LO to keep the two signals 455 kHz apart. The 2nd grid acts as the "plate" for the LO. The 3rd grid is the control grid, used for the RF input. The 4th grid is a **shield grid**, to prevent feedback from the plate to the control grid. The 5th grid is a **suppressor grid**, used to reduce secondary emission of electrons from the plate. The shield and suppressor grids are "housekeeping" grids and don't contribute actively to the radio operation. The RF and LO signals are mixed to produce an IF output of 455 kHz.

The 2nd tube, (12BA6) is a **pentode** IF amplifier. It is coupled in and out with tuned transformers to form an active bandpass filter and amplifier that is sharply tuned to 455 kHz. The 1st grid is used as the control grid, the 2nd as the shield grid and the 3rd as a suppressor grid.

The 3rd tube is a (12AV6) diode detector and triode amplifier. Output from the IF amplifier is applied to the diode plates for detection, and the resultant audio envelope is passed via a volume control potentiometer to the control grid for amplification.

The output is capacitively coupled to a (12V6) tetrode power amplifier with enough current gain to drive a loudspeaker. The 2nd grid is used to sample the AF and feed it as a bias control voltage to the IF stage for **automatic gain control (AGC)** The AGC circuit provides a variable negative feedback to suppress sudden loud signals so they don't overload the amplifier and cause distortion.

The power supply is a full-wave rectifier (5Y3) with capacitive filtering. The power transformer supplies 250V each side of center tap for the vacuum tube plate supply, a 5 Volt winding for the rectifier tube and a 12V winding to supply the receiving tubes. You might wonder why a separate winding for the rectifier. That's because it must carry the full 300 volt power supply

output so it needs to be isolated from the other filaments.

In this Unit we've seen how the building blocks described in previous units can be assembled to create a workable AM receiver. In the next unit, we'll add a few bells and whistles to make it into a high performance HF communications receiver.

Terms to remember

AF	**Audio frequency**
AGC	**Automatic gain control**
BFO	**Beat frequency oscillator (Local oscillator)**
IF	**Intermediate frequency**
Mixer	**Product detector**
RF	**Radio frequency**
Superheterodyne	**Receiver using a product detector**

The IARU Battle *Near* Seattle—Prelude

On the next two pages is an article written by Mike, N7WA which has been submitted for the QST write up on the July 2009 IARU (International Amateur Radio Union) Contest. How much of it actually gets used is anyone's guess.

We were encouraged to produce something by Ward, N0AX and Carl K9LA because it was one of the first times, a horse race like this had happened on Live Scores.

What is *Live Scores* – it is a linking of our contest logging programs to update our raw scores every 10 minutes or so on a special website setup for this purpose. This essentially allowed us (and the whole world) to "watch" each other as the contest progressed.

I think all of us got more completive watching *Live Scores*, although it seemed to me we were always behind until the last couple of hours. While we hope for a repeat of 2008, only time and log checkers will tell.

	QSOs	N7BV	N7WA
1.8	CW	10	0
3.5	CW	77	66
3.8	PHONE	0	5
7	CW	171	285
7	PHONE	89	60
14	CW	288	242
14	PHONE	99	219
21	CW	152	146
21	PHONE	130	133
28	CW	41	95
28	PHONE	331	76
Total:		1388	1327

	N7BV	N7WA
MULTS		
1.8	5	0
3.5	16	15
7	38	49
14	64	72
21	25	21
28	11	10
Total:	159	167
Scores:	**656,352**	**642,115**

Here is what K7WA had to say after producing the above spreadsheet:

"Wow!!! I have to say Mike, having your score in front of us sure kept the pressure on! We dropped behind on mults while we were piling up 3 point QSOs on 10 Phone, then started creeping back up - the breaking point came when Matt went to 40 Phone Saturday night and ran JA's (Japan) for an hour - those 5 pointers really helped!

The scores are pretty darn close - time will tell! Good job by all!!! " Submitted by Chuck N7BV

The IARU Battle *Near* Seattle

by Michael Dinkelman, N7WA

In Washington State, when you say multi-op, the image of Rush Drake W7RM's station usually comes to mind. Since his passing, multi-op have been pretty much limited to Chuck Jones N7BV's station up in the far Northwest corner of the state or the occasional rouge operation. This year, during the IARU contest, we were fortunate to have two multi-ops on the air that were fairly matched. Plus, both were on *Live Scores* which made for some interesting competition. The two stations were N7BV (near Port Angeles) and N7WA (situated between Seattle and Tacoma).

The station at N7BV was manned by a combination of experienced ops (N7BV, K7WA, and KQ7W) as well as some neophytes to the world of radio contesting (KE7DRT and WA7JEP). At N7WA, we had two operators (N7ZG and N7WA) as this is a traditional yearly operation for us. The stations are equipped somewhat differently in that N7BV uses several short towers with yagis for the high bands and a number of wire arrays for high and low bands. N7WA has a single 100' tower with yagis for 40M and up plus wires on 80 and 160Meters. Neither station runs much more than 600 watts.

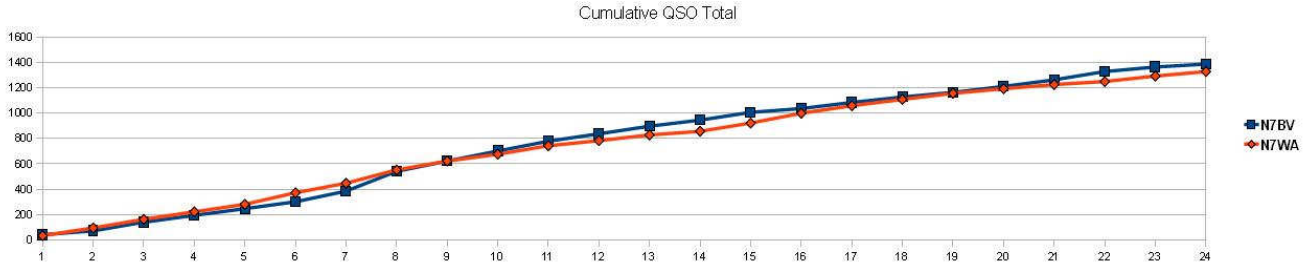
I am not going to give an hour by hour breakdown of the battle. Looking at the charts, you can see the tracking of the QSO, point, multiplier, and cumulative score totals. They're darn close. What made it fun was that we were also watching each other on *Live Scores* and the packet spotting network. At N7WA, I've used *Live Scores* several times in the past year but my “competition” has usually been someone thousands of miles away. That doesn't begin to compare to the fun of fighting live with someone in the same state. As Jim K7WA noted, “it really helps to keep your butt in the chair”.

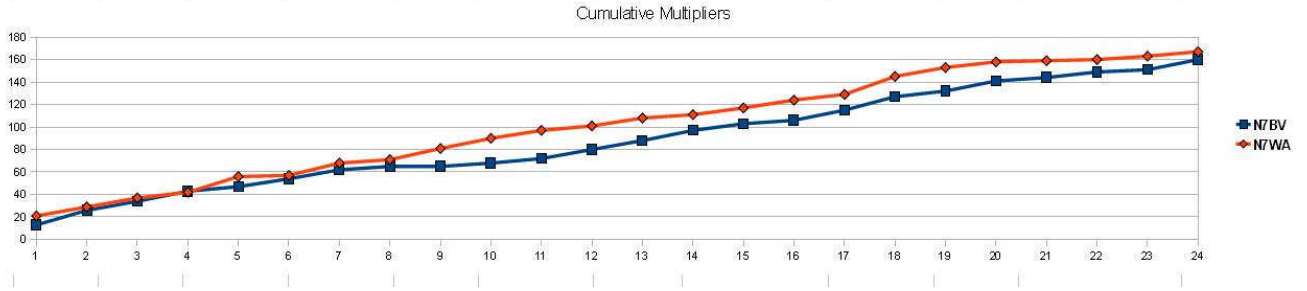
In the end, the difference may have some down to prep and a bit of overconfidence. Both N7BV and KQ7W had been monitoring 10Meters all week prior to the test. How they knew something was going to happen up there I'll never know but when 10Meters opened up during the test they were able to take full advantage of the situation to the tune of 200 more contacts on that band. (In fact, they were able to use their two female contesting neophytes to great advantage on 10M SSB.) Down south of Seattle at N7WA, we had a hard time believing that 10Meters was really that good and stayed on 20 and 15Meters racking up multipliers but fewer contacts. When we did make it up to 10Meters, it was obvious we had been missing something when Japan called in.

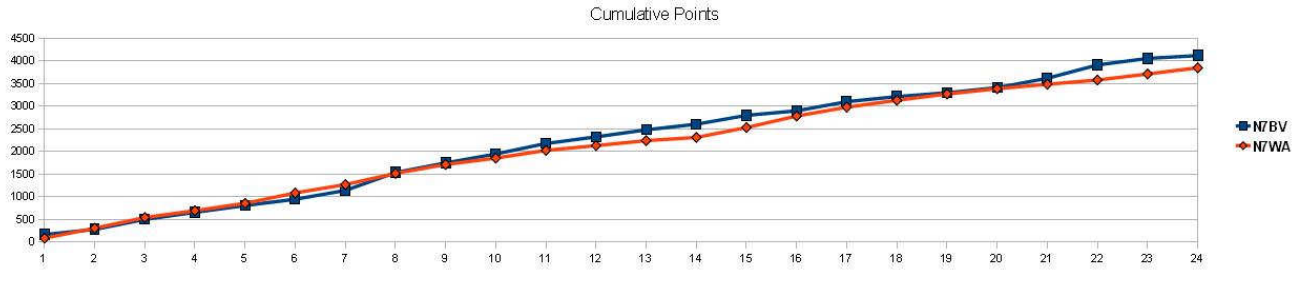
A mistake in preparation occurred at N7WA. My inverted L can be adjusted for 160Meters, 80Meters, and 75Meters. Since I already had a dipole for 80, I adjusted the inverted L for 75M thinking that would be a good band for racking up some low band Q's. It would have been much better to have left the antenna on 160M to grab a few additional multipliers. Frankly, 75M SSB was a bust at N7WA producing only 5 contacts and 1 multiplier. There was no way to adjust the antenna once darkness had fallen and the I expected it would have been futile to try and use the radio's internal tuner to match the 75M antenna to 160M. (I should have tried anyway).

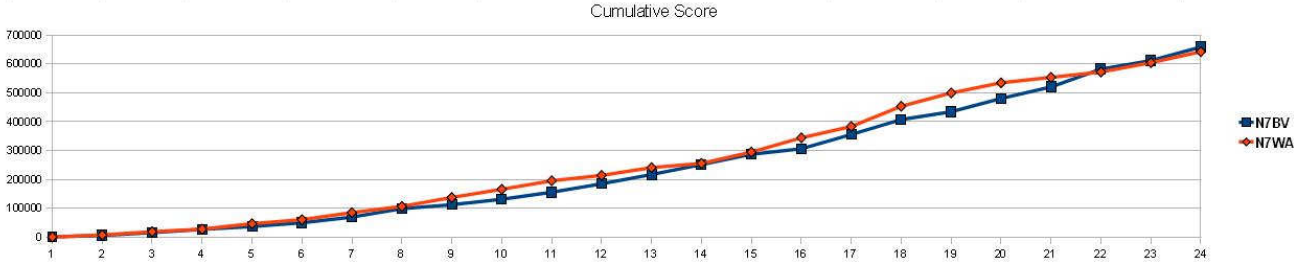
Finally, there was the overconfidence factor. At N7WA, I was feeling pretty good about our lead at about 1AM local time (hour 20 on the Cumulative Score Chart). I even sent N7ZG off to get some sleep as he had to teach Sunday morning. Then, something was obviously wrong by 2AM and I could see it on *Live Scores*. Somewhere in there, the team at N7BV had found a run of JA's on 40M SSB that I simply missed at N7WA. Maybe if I hadn't sent N7ZG off to get some sleep, he may have found them on the second radio as well. We'll never know but I feel that was a crucial mistake on my part. I really hand it the team at N7BV for hanging in there in the early morning hours. In the end, this competition may be decided by the log checkers as Chuck feels his team may have a higher busted call rate.

Either way, it was a lot of fun and I think that's why we play this game. I am looking forward to a rematch. Just remember that when you hear those big multi-ops on the east coast battling it out, there may be another battle going on out west once in a while.









Electronic Fundamentals, Part-2 (*Digital Circuits*)
Unit-7 (Memory)

In Unit-4, we saw how flip-flop multivibrators could be used to build shift registers for storage. Think of computer memory as rows and rows of flip-flops called **memory cells**, arranged in a two-dimensional matrix like this.

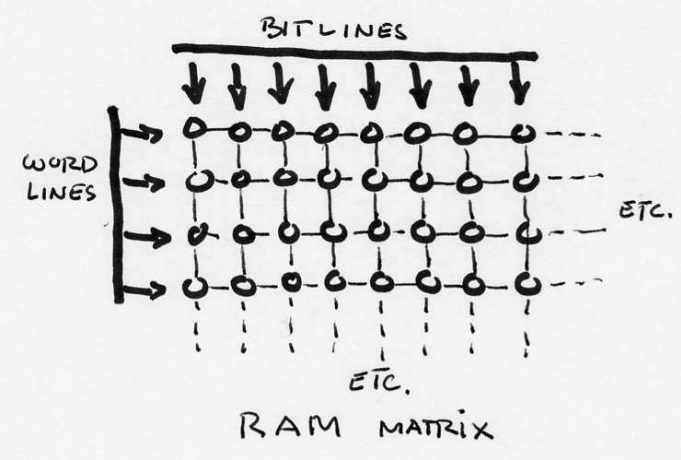


Fig 7-1

To write information into the matrix, rows and columns of cells are addressed and individual flip-flops are activated to produce 1s or 0s. They will remain in this state until erased or overwritten with new data. This type of memory is called **S**tatic **R**andom **A**ccess **M**emory or **SRAM**.

Dynamic **R**andom **A**ccess **M**emory (**DRAM**) , used to load and access temporary programs **(software),** works on a different principle. Memory cells are arranged in a matrix the same as before, but each cell comprises a capacitor and a transistor "switch" The state of capacitor charge determines whether the cell contains a "1" or a "0". It's a simpler and cheaper way to make a memory but there's a catch. The charge on the capacitors tends to leak off rapidly, so the whole matrix must be "refreshed" every few microseconds by reading the charge on the capacitors and re-writing it to keep them charged.

Whatever kind of RAM is used, it is volatile and can be accidentally erased so, for core applications like basic programs that need to run things and must not be tampered with, **R**ead **O**nly **M**emory **(ROM)** is used. It involves chips that are hard-wired to perform specific functions and cannot be re-wired. RAM Programs are called **firmware**.

There is a form of Rom that can be overwritten. Erasable, Programmable Read Only Memory, (**EPROM)** EPROM uses ultra-violet light to re-program a chip but it can only be done once. **E**lectronic **E**rasable **P**rogrammable **R**ead **O**nly **M**emory, **(EEPROM)**, can be re-programmed over and over again using special software. A **flash memory** version of EEPROM is used in cell phones and cameras, and in radio applications when a manufacturer releases new firmware versions from time to time and offers a download over the internet instead of having to send the radio to the factory for re-programming.

A flash memory is also used for the **B**asic /nput/**O**utput **S**ystem **(BIOS)** chip at the heart of every personal computer. Owning a PC is like waking up to a

newborn baby every morning It has no memory and, what's more, this baby is blind and deaf. It has no way to experience its surroundings and doesn't know what to do until told. In a computer, the operating system resides on a hard disc and can't be accessed without some kind of instructions about where it is and how to access it. The BIOS does that job. It contains a basic set of instructions to start up the computer and get it working. The whole system looks something like this.

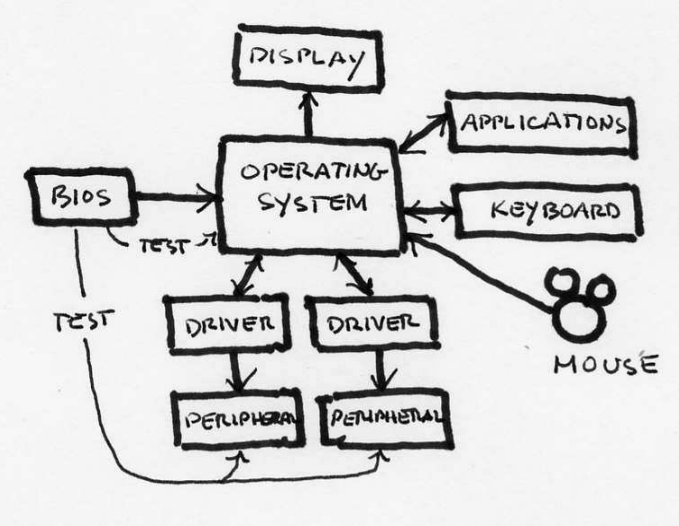


Fig 7-2

At "turn on", the BIOS chip checks the operating system and all peripherals like printers, modems, etc. to make sure they are connected properly and functioning. Then it instructs the operating system to load. It loads "Windows" or whatever operating system you are using. The operating system comes on line and waits for you to tell it what you want it to do. Suppose you want to do some word processing. You use a mouse to select an application, in this case, word processing. (Incidentally, one increment of motion of the mouse is called a "Mickey"). The operating system loads the word processing program and you're in business. If you want to print whatever it was you typed, you hit PRINT and the operating system goes to another set of instructions called a **Driver** that tells it how to interface with the particular printer you have. The driver, working through the operating system, acts as an interpreter between the word processor application and the printer..

As you can see, a typical computer contains many different kinds of memory working together to behave as a "transparent" interactive system. Every piece of information that's input to the system is converted into binary code, worked on by various programs, and then used to control something or to display the result.

In this Unit, we've explored some of the types of computer memory. In the next unit, we'll see how binary information is able to be displayed.

Terms to remember

Application	**Program to perform specific set of operations**
BIOS	**Basic Input/Output System**
Cell	**Single bit memory unit**
DRAM	**Dynamic Random Access Memory**
Driver	**Interpretive instructions for peripheral**
EPROM	**Erasable Programmable Read Only Memory**
EEPROM	**Electronically Erasable Programmable Read Only Memory**
Flash memory	**Non-volatile read/write memory**
Operating System	**Defines and organizes applications and performs Operating System Defines and organizes applications and performs input/output functions**
PROM	**Programmable Read Only Memory**
RAM	**Random Access Memory**
ROM	**Read Only Memory**
SRAM	**Static Random Access Memory**

Paul Honore'

FOR SALE OR TRADE

~ ~ ~ ~ ~ ~ ~ ~

FREE - Older 'upright' piano. You will have to remove from house, but there's only one step down to ground level. Call Bill, W6JEQ, at (360) 808-2069.

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Matt, KQ7W is selling his Yaesu FT-450AT for $650 if you're interested call Chuck N7BV 452-4672

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Your Ad Could Go

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 August 29th, 2009:

First Federal Savings & Loan of Port Angeles Balance:	$ 7,126.70
Outstanding Cheques:	- 0.00
Current Checkbook Balance:	**$ 7,126.70**
	$ 7,462.96

David R. McCoy,
KE7JEJ -.- . --... .--- . .---
CC-ARC Treasurer

BIRTHDAYS:

Birthdays for September, 2009 and the first week of October, 2009:

Cowen, Stan, KI6HCW, Sep-06

Metz, Chuck, W5RFL, Sep-16

Wilson, Kline, W7CNN, Sep-24

Wilson, Robert , AL7KK, Sep-28

Fontaine, Maureen, KH6MF, Sep-29

Lapin, Allen, KD7JTH, Oct-05

YL's

Sampson, Cathy (Robert, K6MBY), Sep-11

McCarty, Patricia (Michael, N7MLM), Sep-21

Happy Birthday!

COMING EVENTS

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There are no Hamfests or Conventions within 100 miles in September

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Please welcome the following new members to the CC-ARC!

May 2009

KB0PWP, Scott, W. (Travis) & Kathy

K7INA, Fish, Russ

July 2009

WB7UKT, Kopis, Jeffry J.

NEXT YL LUNCHEON

September 11th
Sergios in Port Angeles

Time: 11:45 a.m.

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

2009 YL Luncheons:

September - Sergios - 205 E. 8th, PA
October - Fortune Star -145 E. Washington, SQ
November - Chestnut Cottage - 929 E. Front, PA
December - Stymie's - Cedars at Dungeness, SQ

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	Dan Abbott N7DWA 360-582-3824
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 2009

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