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A Journal of the Montgomery Amateur Radio Club (MARC)

MARC Proceedings

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"Time !" by Glenn D. Simons N3COB

As we jump onto the digital mode bandwagon we are letting our PC's handle the work load. Yet at the same time do we really know what we're asking our PC's to do? Especially with regard to the latest and most popular modes, FT8 and any other or future mode, where time is a critical factor to the success of the modes operation.

Before I go any further, let me pull out my disclaimer and state for the record, I am not an authority or expert on the subject of computer time, nor do I have an advanced education on this subject you are about to read. I am merely an observer with a solution I found to be successful. And wish to share this experience with everyone that has an interest and especially those that operate FT8.

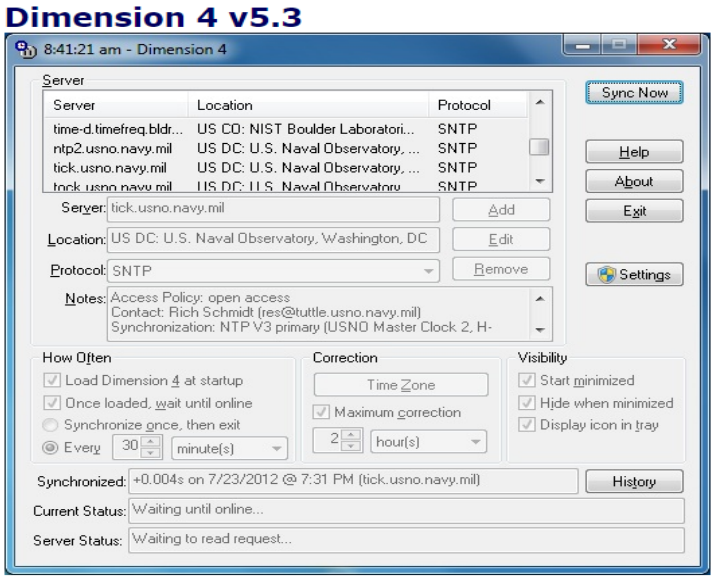
…how do I maintain the accuracy of my PC clock? That is the big question.

A lot of us "assume" our PC's clock is accurate, right? As it's a crystal controlled computer, with a clock, it should be fairly accurate one might logically think. As we move forward into the millennia things are becoming more complex and are demanding a higher accuracy with respect to time.

We are seeing this first hand with the FT8 protocol. If your PC clock is off by even a few seconds it could mean not being able to complete a QSO or not being able to copy any data. So how do I maintain the accuracy of my PC clock? That is the big question.

After checking with my local amateur friends and doing a bit of Google searching, I found one quick fix with a program called **Dimensions 4.** It is freeware, they do ask for a donation if you find it useful. They state on their website **"Dimension 4 is the fastest and easiest way to synchronize your computer's clock if you're running a Windows-based operating system. Once Dimension 4 is installed, you'll most likely forget that it's even running. It's that automatic."** It can be found at the following URL: http://www.thinkman.com/dimension4/

I've used this program on two of my computers successfully over the past couple of months with no issues found running Windows 10 on both computers. This program allows you to select the time server from a long list of choices. A few examples are US CO NIST Boulder Laboratory and US DC U.S. Naval Observatory. Below is a screen shot showing where and how to select your time server:



("Time ! " continues on page 2)

I'm not going to go into any further detail. You can find the same info I have on their website. Again as they mention on their site, you install it and forget it's there.
So this is a great remedy to the problem, but **what if you lose your internet connectivity or are simply operating portable where there is no access to the internet or cell coverage.** For this scenario I've found two very viable solutions.

First up you'll need to purchase a small GPS receiver. They can be found all over eBay and elsewhere. Here is an example you can find on EBay for usually less than $20:

https://www.ebay.com/itm/FOR-GPS-Data-Acquisition-PC-Notebook-Navigation-GPS-USB-Receiver-GMOUSE-Antenna/323462490951?hash=item4b4fddeb47:g:kJEAAOSwTJtbp5uB

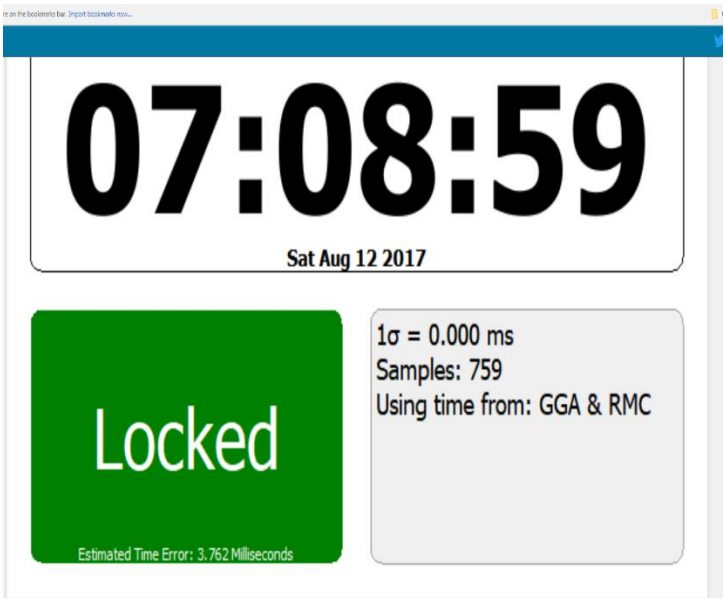
The GPS I picked up is a Stratux Vk-162 Remote Mount USB GPS. (found on eBay). **Most of these types of GPS's have a magnetic base.**

Once you have the GPS, you'll need to locate the driver for the GPS to be recognized at one of your COM ports. My driver was found at **http://products.stratux.me/vk162** . Next, you'll need a program that will take the GPS data and use the time to correct your PC Clock. My good friend Andy/WA3LTJ steered me to a company called VisualGPS LLC. They have a program specifically designed for this application called **NMEATime2**. It's downloadable and free for 30 days. The purchase price is $20.48. It can be found at: **http://www.visualgps.net/**

You'll see they have a number of other products that offer various features. Some are free others are not. Check out their other products, you might find them of some value.

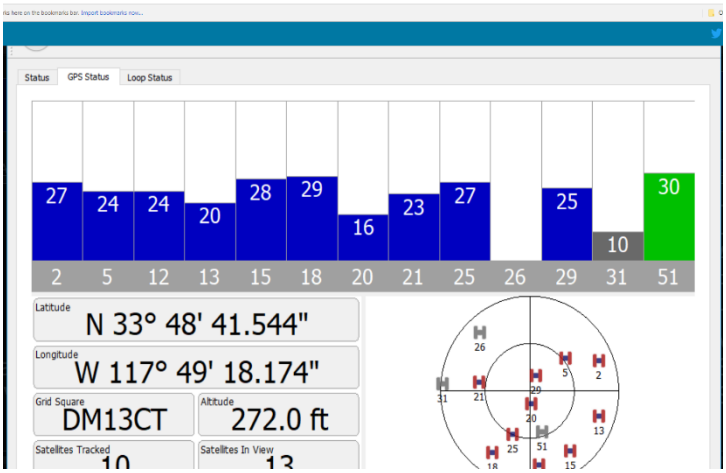
Once you've downloaded NMEATime2, the setup is pretty easy. Simply go to the TOOLS menu and enter the COM port where your GPS is located. You may need the assistance of your Device Manager to locate the correct COM Port.

After I entered the COM Port, the program became active almost immediately. Even sitting in my shack at ground level, with a two story house above me, I was able to obtain a GPS lock with multiple satellites. Very impressive. Here are some screen shots taken from the ViualGPS website:



With this program running, the longer it is in operation the more accurate the time. As you can see above this has taken 759 samples and the difference between the PC Clock and the GPS Time is 3.762 Milliseconds. That number will become smaller the longer the program runs. Which will equate to the "DT" time on your WSJT/FT8 Software to be at or close to 0.0. Yes it will fluctuate some but statistically more accurate and more stable.

("Time" continues page 3)



This screen shows the Satellites in view, signal strength, Lat/Lon, Grid Square and more.

The third option to maintain an accurate PC Clock I found was with a program called **RADIO CLOCK**. This program basically listens to a radio's time signal from your radios receiver and corrects the time on your PC clock. This program comes out of the UK. Radio Clock can be found at: **https://www.coaa.co.uk/radioclock.htm**

Radio Clock can decode the following time signals:

LF transmissions			
North America	WWVB	60 kHz	Boulder Colorado (see note)
Europe	MSF	60 kHz	Anthorn England
Europe	DCF77	77.5 kHz	Mainflingen Germany
HF transmissions			
Asia	RWM	4996, 9996, 14996 kHz	Moscow Russia (not coded)
USA	WWV	2500, 5000, 10000, 15000, 20000 kHz	Boulder Colorado
Hawaii	WWVH	2500, 5000, 10000, 15000, 20000 kHz	Hawaii
Canada	CHU	3330, 7335, 14670 kHz	Canada

As of this writing, I've not tried this program but don't see why it wouldn't be successful. If you can copy WWV which I do regularly to check propagation, it should be very effective.

As you will see on the website the program can be downloaded for free. Should you wish to have the Radio Clock set your PC clock time automatically, you will have to register the program which will cost you 25 Euros.

So, that is all I have to offer on this subject at present. Hope you find this information useful and your feedback is always welcome. Best of 73's Cheers, Glenn/N3COB

Glenn Simons N3COB

Licensed 39 years. First licensed June 1979 as KA3DOO. Amateur Extra Class since 2000.

Have lived in Montgomery County off and on since 1956.

Currently working as a Biomedical Engineer and contract officer representative with the National Institutes of Health in Bethesda, Maryland. Have been in the biomedical instrumentation field over 40 years as an instrumentation specialist.

I've been an active HF operator ever since I was first licensed as a Novice in June of 1979. Have achieved numerous operating awards, WAS all CW, WAC, WAZ and DXCC on 4 bands and closing in on number 5. Achieved the 1000 mile per watt award operating QRP to Tasmania on 4 watts.

Have been a MARC member most of my amateur career and was a club VP for two years in the 1980's. Enjoy kit building, helping others in the hobby and have been one of the MARC instructors working with Dave/W2LNX for the Spring Technician Class for the past 5 years.

N3COB has some very interesting information and photos in QRZ.com.

MARC Elections – Open to All MARC Club Members

November is that time of year when MARC invites any club member in good standing to run for one of the positions of officer or director. The MARC annual meeting and election for 2019 officers and directors will be held on Wednesday, November 7, 2018 at 7:30 PM in the cafeteria of the Council Office Bldg., 100 Maryland Ave, Rockville, MD. There is free parking available in the lower level of the adjacent parking garage (entrance at the corner of Jefferson St and Monroe St) or the parking lot across Monroe St from the parking garage. Nominations are still open and there is still time to nominate yourself or another member for any of the following positions: President, Vice President, Secretary, Treasurer or Director at large (6 positions).

Nominations could have been made at the October 17, 2018 meeting. However you may make nominations by sending an E-mail to the Secretary (mailto:secretary@marcclub.org). To appear on the printed ballot, nominations must be received by 12:00 noon on November 7, 2018. You can nominate someone in person at the meeting prior to the elections. Nominations will close immediately before the vote is taken. If you nominate yourself, you automatically accept the nomination for that office. If you wish to nominate another member, please let him or her know about the nomination so he or she can accept or decline the nomination via E-mail to the MARC secretary or at the meeting. It is very important to inform a nominee so he or she can send a follow up message to the Secretary indicating that he or she accepts the nomination, or so he or she can accept or decline the nomination in person prior to the vote. Acceptance for the nomination is required for the nominee's name to appear on the ballot as a candidate for office. If the nominee does not accept the nomination, the nominee's name will not appear on the ballot. Currently, all positions are open. For additional information on the duties and responsibilities of each office and the director positions, please refer to Article VII of the MARC Bylaws-

- http://www.marcclub.org/mweb/doc/MARC%20Constitution.pdf

MARC needs good leadership to maintain a successful, growing, active club. We need a few good hams to serve so we can keep MARC strong and productive.

BUDGET and PROJECTS

On Wednesday October 17 the MARC Board of Directors began discussions on the 2019 budget and the funding of projects for 2019. The MARC membership meeting focused on 2019 procurement proposals. "Al" NW2M took the lead urging members to offer suggestions regarding club projects, programs and resource purchases that would be presented to the board and to the members for approval. "Al" will be using the MARC Reflector as a principle means to communicate with the club members. One would need to subscribe to this email service by visiting the MARC website at marcclub.org.

"Al" NW2M proposed a number of categories for club members to consider. He asked, " What if you were offered 100-dollars, how would spend it?". He posted eleven signs on the wall and handed out yellow Post-It sticky notes for members to jot down suggestions and attach their notes to the eleven signs titled; Trailer, Radio & Modes, Public Service, Education, Field Day, Science Day, Public Relations, Antennas,

Web Page, Repeaters, and Miscellaneous. He went on to say that this would be the first phase of a multi-step process whereby the club would identify important procurements for 2019. This first phase, he implied, an unfettered, unfiltered step where one tries to capture as many suggestions as possible. Recent reports by "Al" indicate enthusiastic responses generating a host of suggestions. "Al" has sent reports to the MARC Reflector. The following is an extract from the report that NW2M posted on the MARC Reflector October 19th. Note that he invites replies but all replies should NOT be "reply to all". To see "Al's" report in its entirety please refer to his original email.

Greetings, I wanted to take a moment to thank everyone at the Oct 17th MARC meeting. Your inputs during the brainstorming session yielded about 75 ideas and suggestion across 11 categories. These are simply ideas- not critiques or criticisms. Round #1 is complete. That said, we need to move to Round #2 to help the 2019 Board with the budget decision process.

You are the experts in these areas! Please edit/correct any errors that I may have made. All names/replies will remain confidential, so- Do not REPLY-ALL, reply just to me.

ROUND #2-

For each of the 75 entries below, please take the one(s) that you suggested and provide 3-10 sentences of description and a price for your idea. This will help the Board understand your idea and the magnitude of the effort (cost and effort). The Board will meet very soon to formulate a way-forward in 2019. Please do not leave your idea/suggestion orphaned!

Do not REPLY-ALL, reply just to me.

I will expand this list with your comments and provide it to Aleks. She will need this expanded information package to move forward in the 2019 calendar year.

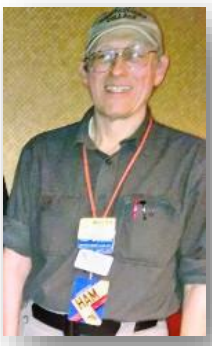
I hope to have 75 email replies! Again, Do not REPLY-ALL, reply just to me.

Have a great weekend! Best of 73, Al NW2M

Milled-Drilled-Thrilled!

Latest News on the Trailer

Al, NW2M, is sharing a progress photo in this edition of the MARC Newsletter. This is a photo of the steel cross beam which will be welded across the steel Vee-frame of the trailer. This hefty piece of 3"x3"x0.125 box steel will hold all of the vertical weight of the new 31' crank-up mast. The black POR-15 paint hides the two 1/2" holes drilled to hold the base of the mast (in photo). Two 1/2" x 4-1/2" long bolts will secure this to the cross beam. Al will be MIG welding this together next weekend. After the steel base is complete, Al moves up about 7' and transitions from steel to aluminum cross braces and TIG welding. More progress photos to come. He is racing against the weather!



EDUCATION

One of the flag-ship programs offered by MARC is its Education program that provides free instruction modules and license exams. David W2LNX, as Education Committee Chairman, has been instrumental in facilitating numerous people getting their Amateur Radio licenses. He has also enlisted the support of many Hams by urging them to acquire their Volunteer Examiner (VE) credentials. He has fielded quite a team. Queries? education@marcclub.org

The following is the first installment of a series on Morse Code. It will come as no surprise to those who know the author why WB2U champions the cause of Morse Code in the Amateur Radio ranks. The series will consist of drips-n-drabs on the viability of CW Morse Code.

Not Dead Yet

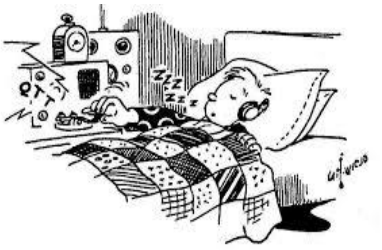
by Vic Nardo WB2U

"Not Dead Yet" is a multi-part feature that addresses the topic of radiotelegraphy or what we commonly call CW Morse Code. Today's devotees of CW are often told that Morse Code is a dead mode of communication. If not dead and buried, it would seem to many to be shrouded in silence.

Part one reflects on how CW Morse Code is viewed as a dead-language. Part 2, to appear in a future edition of "MARC Proceedings", picks up on its antithesis; how it may be said that CW is still a valid and very important mode of operating and worthy to be included in ones set of Amateur Radio operator skills. Part two will attempt to assert the same sentiment that Mark Twain expressed so long ago while responding to obituaries reporting his death:

"The report of my death was an exaggeration"

Today's devotees of CW are often reminded that Morse Code is not necessary anymore; that it is a dead mode of communication replaced with far more sophisticated modes. If it is not dead and buried, it is a least shrouded in silence. Here we will review its post-mortem at the risk of inciting chagrin of Morse Code mavens and aficionados by even suggesting in what respect CW is dead.



(Maybe it is in a deep slumber like our cartoon operator.) Thanks to http://30cw.net for the graphic.

There are some objective historical reasons to believe that CW Morse Code is receding in importance. Closest in familiarity to the Amateur Radio community is the changes that have taken place over the years regarding licensing.

Amateur Radio and the FCC

Nearly nineteen years ago in December 1999, after a lengthy review of the Amateur Radio licensing system, the FCC commenced a series of changes. In April 2000, there was a drop in the number of license classes from six to the current three classes. In February 2007 the FCC discontinued requiring Morse code proficiency tests and issued these new regulations to streamline the licensing system and bring the Amateur Radio service into the digital age. Modifications such as these opened up the doors to many new hams who otherwise were impeded by code proficiency requirements.

Experience in Amateur Radio today shows how computerized means of communications have entered into the operation of most modern Ham shacks. Even CW has been automated.

The F.C.C. first lifted the CW requirement for entry-level licenses in 1991. It later dropped proficiency requirements for higher-level licenses to five WPM, from 20 WPM. After international regulations stopped mandating knowledge of it in 2003, it soon was no longer required in the United States. The requirement was formally phased out in 2007.

ITU and IARU

The ITU adopted language in its WARC-03 that dropped the international treaty obligation for member nations to require proficiency in Morse Code to issue an Amateur

radio license for HF frequencies. Here follows a quote from the International Amateur Radio Union (ITU) webpage:
["The old regulation that Morse was a requirement for the operators of amateur stations below 30 MHz was found in a provision that read as follows:

"'Any person seeking a license to operate the apparatus of an amateur station shall prove that he is able to send correctly by hand and to receive correctly by ear texts in Morse code signals. The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz'

"That was replaced with a provision giving each administration the right to decide whether or not Morse is a required qualification as follows:

"'25.5 Administrations shall determine whether or not a person seeking a license to operate an amateur station shall demonstrate the ability to send and receive texts in Morse code signals.'

"The alternative of simply deleting the old provision was rejected because a number of administrations thought that the matter was so important that a positive decision not to require Morse as a qualification was appropriate. The effect is actually the same: Morse code is no longer an internationally required qualification for an amateur license, though an administration may still require it."]
for those potential American licensees. The FCC had implied in the past that the only reason they were retaining even the feeble and easily circumvented code requirement in place was the international treaty obligation. All that changed and eventually trickled down from the international through the International Amateur Radio Union (IARU) to our current US licensing procedures.

Other groups had gone forth making changes long before similar changes were made to our licensing procedures. The above changes to licensing classes took place after other changes had taken place in other institutions. Following are some examples.

U.S. Department of Defense

Since the late-1990s there had been a gradual diminution of the use of Morse Code in earnest by the U.S. Department of Defense (DoD). Even before that, as early as 1967, a ship's bell began ringing the death knell of CW in the U.S. Navy. Paul Bock Jr, ETCH, USNR-RET wrote in his "U.S. Navy Code Story":
Around 1967, the U.S. Navy announced that it would no longer require candidates seeking promotion to Radioman (RM) 2nd Class (E-5) to pass a code test. Not surprisingly the response was mixed, with older Radiomen decrying this change in the promotion requirements while younger RMs were jubilant, seeing the code requirement as archaic amid the use of narrow-band, multitone radioteletype and the just-emerging technology of shipboard satellite communications.
There were also those who expressed concern about the time when code might be needed and no one would know how to use it.
http://www.radiomarine.org/gallery/show?keyword=USNAVY&panel=pab1_7

The Navy stopped teaching Morse code on surface ships in 1988 and soon phased out its use on submarines. It was not completely eradicated from all the military, but whatever areas it was used were special-ops niches. CW Morse Code is no longer being readily taught to the military. It is true that some military roles require some knowledge of CW radiotelegraph if for no other reason than having to intercept code communications by other nation's militaries still using it. Special operation forces likely need to have a modicum of knowledge but even here technical automation plays a significant part. It is also true that Navy signalman require CW radiotelegraph for lamp-light operations though even lamp-light ops are becoming automated. See
https://www.navy.mil/submit/display.asp?story_id=92864

The NY Times reported December 2006 that CW was a "fading signal".
www.nytimes.com/2006/12/27/business/27morse.html
presumably due to organizations using cyber or digital encryption of the electronic signals thus supplanting the traditional role of CW radiotelegraph.

U.S. Coast Guard

The U.S. Coast Guard began dropping CW back in the summer of 1993 when it no longer required watch stations for the emergency frequency of 500 kHz:
On July 31, the Coast Guard had a final day of monitoring the frequency.
"As we conclude our watch on 500 kHz, we wish the maritime community fair winds and following seas," the Coast Guard said in a final Morse code message. "From all Coast Guard radiomen, we bid you 73s (best regards)."

https://www.deseretnews.com/article/309595/COAST-GUARD-JOINING-RANKS-OF-FORMER-MORSE-USERS.html

Soon after the above message the Coast Guard began phasing out he teaching Morse code to radio personnel and began removing Morse equipment from its ships.

USCG Stops Monitoring 2182 KHz

The U.S. Coast Guard has decided to terminate the monitoring of 2182 kHz, which was first designated more than 65 years ago, as an international distress frequency. "Advancements in satellite, digital, very high frequency (VHF), and high frequency (HF) radio communication equipment, including satellite service provider competition, have improved service and reduced costs of this equipment causing MF radiotelephone to become obsolete," explained a Coast Guard notice published in the US Federal Register on July 15/13.

"The site deterioration, costly upkeep, and extensive maintenance required to support this legacy MF system, as well as the relatively minimal use by mariners, has led the US Coast Guard to discontinue support of the MF system," the Coast Guard added. The 2182 kHz frequency was first designated at the International Telecommunications Union Radio Conference in Atlantic City, NJ, in 1947 . http://jproc.ca/radiostor/2182_uscgmsg.html

Many countries terminated their use of 2182 kHz after 1999, but the US Coast Guard continued to use this frequency for "watchkeeping" from shore in order to support smaller vessels that operate between approximately 20 and 100 miles from shore that were not subject to the Convention for the Safety of Life at Sea (SOLAS).

Effective on August 1, 2013, the Coast Guard will terminate its use of 2182 kHz for these watchkeeping purposes, said the notice. "Mariners should not need to purchase any new equipment to make this change from 2182 kHz to other GMDSS [Global Maritime Distress and Safety System] distress frequencies," noted the Coast Guard.

Canadian Coast Guard

Conversely, the Canadian Coast Guard will continue to monitor 2181 KHz. A CCG Supervisor cites the following: "As far as the Canadian Coast Guard is concerned , we are still monitoring 2182 KHz, for the time being and as far as I know, there are no plans to stop doing so for the foreseeable future. We've been hearing about the death of 2182 kHz for years now but Canada has still continued to monitor this distress frequency…"

Canadian Coast Guard Stops 500 KHz Watch

On July 28 1999, the Canadian Coast Guard stopped the watch on 500 KHz after sending its last CW message. Here are some extracts from a transcript of the last message:

CQ CQ VAS de VCO VCO
ON DECEMBER 15, 1902, GUGLIELMO MARCONI MADE COMMUNICATION HISTORY BY TRANSMITTING THE FIRST WIRELESS RADIOTELEGRAPHY SIGNAL FROM THESE SHORES. FOR 97 YEARS WIRELESS OPERATORS HAVE PROVIDED COMMUNICATIONS DEDICATED TO THE SAFETY OF LIFE AT SEA. … IT IS WITH BOTH PRIDE AND REGRET THAT WE REMEMBER THOSE WHOSE LIVES WE HAVE HELPED SAVE AND THOSE WE COULD NOT. WITH ADVANCES IN TERRESTRIAL AND SATELLITE COMMUNICATIONS WE NOW SIGN OFF THE MORSE CODE AS A PRIMARY SAFETY SERVICE TO MARINERS. TODAY AFTER ALMOST 100 YEARS CAPE BRETON ISLAND WILL FALL SILENT ON 500 KHZ. IT IS THUS FITTING THAT ONE OF THE LAST REMAINING CW STATIONS ON THE ATLANTIC COMPLETES THE CYCLE BEGUN SO MANY GOOD BYE AND 73 AR DE VCO CL VA

Sooke Coast Guard Radio VAK Sends Last Morse Code Message

http://www.nauticapedia.ca/Articles/Sooke_Radio_Last_Broadcast.php

Wayne Fullerton transcribed the "Final CW Broadcast" from Victoria Coast Guard radio in Sooke (VAK) on March 31, 1992 at 1600 hrs PST. Sensing the history of the moment and perhaps being somewhat nostalgic Fullerton recorded the transmission on tape. The transcription of that Morse code text was sent by operator Chris Hyde as follows:

On 500 KHz:
CQ de VAK VAK
Station Closure MSG QSW 430 KHz AR
On 430 KHz: CQ CQ de VAK VAK BT
At 2400 UTC VAK will close forever after 84 years SVC
VAI and VAE will handle MF CW and RT
Good Bye to all stations and ships at sea.
73 NW QRU QRT CL AR VA

"Good Bye"

On the recording tape at the end of this broadcast, the vessel c/s KSBZ calls VAK, ((VAK de KSBZ K) there is a pause and VAK answers ... KSBZ de VAK GB 73 E E. Chris Hyde at VAK then sent the following:

CQ de VAK NW Closed QRT 73 AR VA

Station "NTRI", an American naval ship station, called in response… "VAK de NTRI 73 AR" but Chris Hyde at VAK then sends simply, "GB" (meaning good–bye). No further transmissions were made.

Royal Navy

The Royal Navy ceased training sailors in the use of the code for wireless transmission the summer of 1997. See https://www.independent.co.uk/news/coastguards-send-their-last-messages-in-morse-code-1291195.html

New Zealand Wellington Radio ZLW Final CW

New Zealand coast radio station Wellington Radio ZLW opened in 1911 and closed after 82 years in 1993.

www.youtube.com/watch?v=7_MJb94w8iA
http://www.nauticapedia.ca/Articles/Sooke_Radio_Last_Broadcast.php

Boy Scouts of America

Several years ago, the Boy Scouts stopped requiring young men to learn Morse code to earn First Class rank. Scouting has changed the requirements of its radio merit badge - once called the "wireless" merit badge - so that Scouts don't necessarily have to learn Morse code.
https://www.deseretnews.com/article/309595/COAST-GUARD-JOINING-RANKS-OF-FORMER-MORSE-USERS.html

The Railroad

Morse code was once the railroad *lingua franca*. But the last known use of it was on wires between Milwaukee and the Twin Cities in the mid-1980s. “The use ended when the last employees who knew Morse code retired”, said Bill Dunbar, president of the Morse Telegraph Club.

Epilogue

On the one hand CW Morse is a dying art of communication. On the other hand it will be shown to be still used at some level by the military but most of all by Amateur Radio operators.

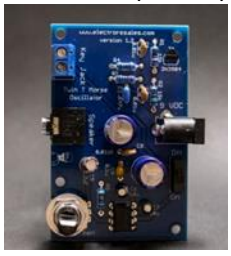
CW Morse is perceived as having few practitioners, i.e., those who know CW radiotelegraphy and actually operate. Metrics would be helpful determining the relative differences in Amateur Radio regarding the number of operators for given modes and bands. Objective research may hold surprises finding out whether CW traffic nets have greater numbers of operators and a greater volume of traffic compared to SSB-voice nets. Why is it important? Spectrum utilization is one reason. CW is generally accepted as a most reliable and effective means of communications. It can be relied upon to get the message through under the toughest of circumstances. These justifications will be topics for future “MARC Proceedings”.

Code Oscillators

By Oren Shomron KC3LUG

As a recently licensed ham with an interest in code and CW, I have been exploring ways to build up proficiency in Morse. Starting out, I found a very nice app for iOS called “Morse-It”. This app provides encoding and decoding functions (using the built-in microphone), a guided CW Academy which gradually builds up your copy and sending skills, as well as a variable speed Koch trainer.

Next, I wanted to build up muscle-memory on a real key. But a key by itself cannot produce a sound - this led me to begin researching code oscillator kits. The first I found was the Super Simple Code Practice Oscillator (SSCPO) from Four State QRP (4sqrp.com). This little kit was indeed extremely simple to assemble, comes with its own built-in key and speaker, and even has a code reference on the back of the board. While this was a breeze to put together and I enjoy how it is self-contained, the tone it produces...well...leaves something to be desired.



After some research, I learned about Twin-T oscillator circuits that can produce much more pleasant sine-waves. I finally settled on a kit from electroresales.com, marketed on eBay as “HAM CW MORSE CODE/TELEGRAPH PRACTICE OSCILLATOR KIT BUILD - TWIN T Oscillator”. See above photo.

I liked the design of the board, the quality of the instructions, and the price was right. Upon receiving the kit, one of the capacitors seemed to have the wrong value, but upon clarification with the seller it turned out this was intentional and due to a tweak in the design. Once again, building the kit was a breeze and took this amateur solderer about an hour from start to finish. You will need a barrel adapter for a nine volt battery to power the oscillator, an external 8-ohm speaker, and a key. With everything connected and powered on, you will be treated to the perfect tone companion on your journey to mastering code!

(Following is a YouTube of a similar build)
https://www.youtube.com/watch?v=dDU_G80LqQI

How I Teach Morse Code

Dick Hayman WN3R

I know I learned it all wrong. First of all, it was a very long time ago when code was required. It was only 5 words per minute (wpm) for the Novice just to get on the air for a year. Back then, the FCC gave the newbies a short 12 months to learn to send and receive at 13 wpm.

At the end of the year, you were either a General class or out. No volunteer examinations for General. As a 13 year old kid, I had to take a bus downtown by the White House to FCC office. Anyway, I passed after the third try. In those days, you had to wait 30 days between exams.

I'm not going to talk about the 78 RPM records I slowed down to 45 and even 33. Today, there are wonderful computer programs that help you practice. Fortunately, you can create your own text file so you can learn the letters in the right sequence.

The key to learning the code quickly is really in the sequence. I learned it by learning the easiest letters first. Today, I still have trouble with S, H, Q, and Y. I thought that if I started teaching the hardest letters first, everyone will have more time with them in the learning process. Then I added common words in a QSO such as 73, NAME, QTH, RST, ANTENNA, RIG, CQ, etc. At the start of the classes, I'd get everyone used to the sounds of the "dits" and "dahs". The drills are easy, 1 dit, 3 dits, 2 dits, 5 dits, 4 dits, in a random order. The students would hear them in a group and yell the number of them out together after each one. This would go on for about 5 minutes.

Next came the "dahs" in the same fashion. After that, dits and dahs together. If you can't hear the combinations, you can't learn the code. Do they know the code? Well, not yet, but they can hear it.

The first word is CQ. There is a pause between the letters as there should be. Do they know the C and Q as letters? Not yet. The next word is QTH. This time instead of just giving me the number of dits and dahs. We practiced saying "dah dit dah dit dah dah dit dah" over and over again as I sent with the key.

After a short break, I teach them about the structure for numbers. Again sending and counting and saying them. As the instructor, I hear the wrong answers shouted out. This feedback helps me decide what to do next and when to do it. Nobody gets left behind. I'm not going to give the rest of the details, except to tell we cover all the numbers and half the alphabet, plus a few words, in the first 1 hour session. And they were the HARDEST ones.

If you ask me about the speed, how many words per minute, I will not answer.

Hear Dick's comments starting at time index 1:07
https://www.youtube.com/watch?v=NXhoU_oZ2-o

Resources for Learning Morse Code

G4FON Koch Morse Trainer: http://www.g4fon.net/

Boy Scout resources: BSA-Raybrun method

Learn the International Morse Code - Boy Scouts of America:

https://www.youtube.com/watch?v=NrPqtgVjBdI&feature=youtu.be

https://www.slideshare.net/JosephAmes1/introduction-to-the-international-morse-code

NETS

Net	Mode	Day and Time	Freq	PL Tone	Purpose	Link
MARC Sunday Net	FM	Sun. 7:30 pm	146.955	None	Information	Marcclub.org
Public Service Net	FM	Tue. 8:00 pm	146.955	None	EMCOMM	Marcclub.org
Maryland Emerg. Phone Net (MEPN)	SSB-Voice				Formal Traffic	http://mepn.n3wke.com/
MARC 6-Meter Net	FM	Tue. 9:15 pm	53.270-	156.7	Information	Marcclub.org
Maryland Delaware DC Net (MDD)	CW	Daily 7:00 pm and 10:00 pm	3.557 MHz	N/A	Section Traffic	http://www.arrl-mdc.net/mdd_net/net.htm
Maryland Slow Net (MSN)	CW 10-12 WPM	Daily 7:30 pm	3.563 MHz	N/A	Training & Traffic	http://www.bdb.com/~msn/
Baltimore Traffic Net (BTN)	FM					http://www.baltimoretraffic.net/
Empire Slow Speed (ESS)	CW 10-12 WPM	Daily 6:00 pm	3.569 MHz	N/A	Training & Traffic	http://eny.arrl.org/nts/eny-traffic-nets/
Radio Relay International East (RRIE)	CW	Daily 8:00 pm	3.552	N/A		