

CQ de WA2LQO

*Seventy Five Years (1944 -2019) as the official voice of the
Grumman Amateur Radio Club*

JANUARY 2019 VOLUME 92 NUMBER 1

MEETING – WE WILL NOT BE HOLDING A JANUARY MEETING

PRESIDENT’S NOTE by ED GELLENDER, WB2EAV

SAD NEWS – WE REGRET TO INFORM YOU OF THE PASSING OF WA2LQO TRUSTEE AND GRUMMAN ARC BOARD MEMBER RAYMOND SCHUBNEL W2DKM

On January 16, 2019, long time Grumman Amateur Radio Club board member and trustee of the WA2LQO license, Ray Schubnel W2DKM, suddenly passed away. The Grumman Amateur Radio Club extends our most sincere condolences to his wife Linda and the family.

Personally, this comes as a tremendous shock to me. Since I became President about ten or so years ago, Ray has been the heart and prime mover of the club. He has been heavily involved in every club decision, and in many cases drove the agenda. It was Ray’s decision that after spending decades of Field Days in tents in the rain, we should investigate what we could do indoors. Similarly, spending most summer picnics under a tarp in the rain also had lost its appeal and we moved to getting together in restaurants instead.

Ray has been the driving force behind the club Field Day efforts ever since Pat KE2LJ stepped down as President and moved away. Pat had always been heavily involved in Field Day, while when I came on, I leaned more towards to doing what the club members themselves wanted, and Ray stood up. As I mentioned, it was Ray who moved our Field Day operations indoors. Also, while putting up our 80, 40 and 20 meter antennas has always been a team effort, Ray has always taken the helm and led the effort.

Ray was our most diehard Field Day operator, spending the entire time we could operate on 40 and 80 meters, and most of that on CW. Ray always used the club TenTec Omni transceiver, augmented by his antenna coupler and accessories. He even made sure to bring along his second antenna tuner for use on the other, 20M, rig.

I recall when, about fifteen years ago, the old Nantucket Lightship was tied up in Oyster Bay harbor, on one occasion we got permission for several of the club members to operate from the lightship, using the original longwire antenna strung between the masts. No surprise that the chief operator was Ray, working with the ol’ TenTec Omni transceiver.

I understand that the family had a small, private funeral, and is holding an open house on Saturday January 26 after 3PM. If anyone is interested, or if anyone wants to send condolences to the family, the address is 70 Dewey Street Huntington, NY 11743.

NO JANUARY MEETING

Due to minimal turnout at meetings lately, the cold weather, and especially the tragic loss of W2DKM, we will not be holding meetings in January and February, and will evaluate the situation and let the membership know.

HAM RADIO UNIVERSITY

As I mentioned, Ham Radio University was held on Saturday January 5, and I attended.

I presented my lecture, and as such, when I arrived there was a pre-made ID badge waiting for me. However, there was something attached to it that surprised me – A note. Apparently someone signing in noticed my badge waiting for me on the table and decided to let me know he was there. I hadn't seen Bob Fischer K2ND since the late 90's, and we met up a little while later. Unsurprisingly he looked somewhat different (as do I), and at first it was kind of awkward, but in a little while we were back to the old repartee and it was like the gap never happened.

My lecture went quite well. I was in a room that holds about 30 and it was a full house. Everyone seemed to enjoy it; I guess the best proof was that I knew from the start that I would run over the allocated 50 minutes, and when time ran out I mentioned that we had to stop for the keynote address (new ARRL managing director Howard Michel WB2ITX). About half my audience got up to leave, but the others didn't move, and simply requested I keep going. After about another 45 minutes I still wasn't finished, but it was getting ridiculous, and I was at a good stopping point. For the rest of the day people were stopping me in the halls and telling me how much they enjoyed my talk.

The new ARRL Hudson Division Director Ria Jairam N2RJ was there and I briefly met her. She was pleasant, but I didn't feel any particular warmth like I did from her predecessor. We will see.

I would include something here about the ARRL related seminars and the keynote, but between catching up on 20 years with K2ND, and my lecture audience having me keep going through most of the keynote speech, I didn't attend anything along those lines, and cannot report back to you.

50 YEARS SINCE THE APOLLO 11 MOON LANDING ON JULY 20th

Ed K2MFY asked me if the club is doing anything to commemorate the 50th anniversary of the Apollo 11 moon landing on July 20, 1969 with Neil Armstrong and Buzz Aldrin setting foot on the moon. Ed mentioned that several radio clubs have held commemorative events at the Cradle of Aviation museum, and might we be able to do something.

If anyone is interested, let me know. If we get some interest we have plenty of time to plan something. I can be reached by email at wb2eav@yahoo.com or cell/text 516-507-8969.

Ed WB2EAV

SERIALIZED ARTICLE

Not hearing any feedback about my inclusion in the last newsletter of part of the article that my HRU presentation is derived from, I guess I will just keep plugging away and include some more each month until I finish it.

Serialized Paper - Radio Receivers from Spark to 16-QAM [continued-Part 2]

From a paper delivered at Ham Radio University 2019 by Ed Gellender WB2EAV.

Spark transmitters were not only power-hungry and dangerous to be around, but they were at their core broadband noise generators, spreading the energy over a wide swath of frequencies. The available filtering only narrowed the radiated spectrum somewhat, still taking up wide bandwidths that severely limited the number of usable channels. Researchers felt there had to be a better way, and with the advent of vacuum tubes, they developed what became known as Continuous Wave (CW) transmission. Since CW also uses Morse Code, which turns the signal on and off, the term “continuous” is a bit of a misnomer; It has been taken to mean when the signal is present (key down), it is a single continuous frequency with no other modulations.

The key part of a CW transmitter is an electronic oscillator that produces a single frequency. The invention of vacuum tube triodes that could provide amplification made the breakthrough possible. An oscillator is an amplifier with a circuit that provides strong, positive feedback at a single, well defined frequency. (A screeching public address system is the same thing – an amplifier with feedback driving it to oscillate at a single frequency). Additional vacuum tubes amplify the signal to suitable levels for transmitting.

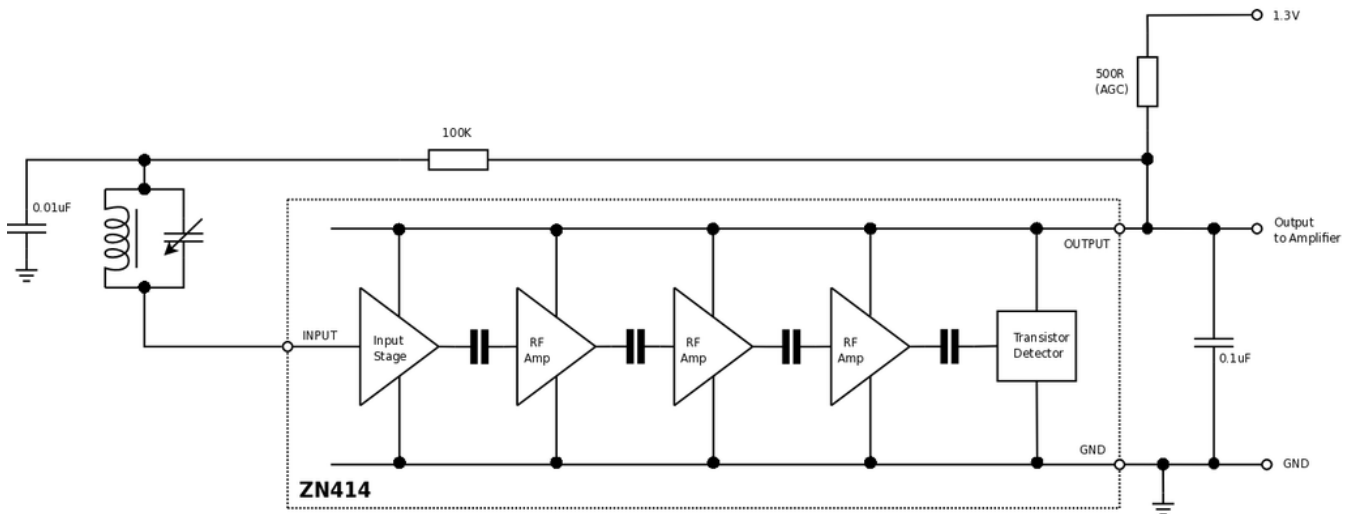
There are two basic types of oscillator – L-C tuned, and crystal controlled. An L-C tuned oscillator uses the values of the inductor (L) and capacitor (C) to determine the frequency. L-C oscillators are simple and reliable, but the frequency is affected by many variables including temperature. (Vacuum tubes have internal heater filaments that literally warm up with time, and a transmitter may not stabilize for hours).

Quartz crystals can be cut and polished to resonate at a specific, precise, repeatable and stable frequency, much more so than an L-C oscillator. However, they are not tunable. The frequency of a crystal oscillator can be ever-so-slightly adjusted to put it exactly on the proper frequency, but nothing more.

Like a CW transmitter, the matching receiver now had amplification to pick signals out of the Aether (see; we still use the term). An early radio receiver design is the Tuned Radio frequency (TRF) receiver, with a series of amplifier stages each with L-C tuning to bring signals at the correct frequency up to the necessary level to be demodulated. The string of tuned amplifiers would provide a narrower reception band than a single tuned stage, the receiver could optimize reception of the narrowband signals. After demodulation of the audio, additional amplifiers would further increase the audio to the level that it could drive a loudspeaker.

The figure shows a TRF receiver block diagram. However, in certain specific applications (single frequency, very close range) the TRF design is still usable and the diagram shown is of a modern receiver. Note the input L-C filter, the sequence of RF amplifiers and a detector.

The series of amplifiers gives a TRF receiver its signal amplification. However, each stage has to individually tuned to the proper resonant frequency by an L-C circuit. To change frequency, each stage must be re-tuned. It is not a simple task to maintaining the proper bandwidth provided by the combined (“cascaded”) filters.



Where a simple receiver could demodulate the rapidly varying amplitudes inherent in a spark signal to output the characteristic raspy sparking sound, CW needed a more complex detector.

The regenerative detector is similar to another tuned amplification stage, but with an adjustable feedback loop coupling a small portion of the output signal back to the input, usually by adding a smaller “tickler” coil around the coil in the L-C circuit. The operator would “ride” the regeneration control to keep it just on the border of breaking into oscillation, and an incoming signal would tip the balance to set it oscillating, generating a tone in the headphones. When properly set, the oscillation stops when the input signal does.

While spark transmissions occupy a part of the spectrum, a CW signal is by its nature very narrow around the center frequency, so the number of usable channels opened up tremendously.

The increased receiver sensitivity and narrower bandwidths improved communication range significantly. The ability of the radio signals to bend with the curvature of the earth continued as it did with spark, but the narrower signals and high amplification receivers made regular communication over moderate ranges more reliable.

It did not take long until CW signals began to vary amplitude with voice or even music, opening up an entirely new field of Amplitude Modulated (AM) broadcasting. Frequencies were soon assigned for an AM broadcast band from 550 – 1650 kHz, where they remain to this day.

Referring back to Figure 2 shows a representative waveform of an AM signal showing a single modulating frequency (whistling into a microphone will provide a fairly good 1 kHz sine wave). Filling in the area between the upper and lower sinusoids is a much higher sinusoid at the radio frequency

The simple detectors used for spark, with the galena ore replaced with a diode (vacuum tube diodes at first, and later germanium) worked very well for AM, so the regenerative detector was not necessary. However, the regenerative detector can be readjusted to detect the amplitude variations of an AM signal while providing some moderate signal amplification, so some dual-purpose CW - AM receivers became available.

GRUMMAN AMATEUR RADIO CLUB

TREASURER'S REPORT – Ed, WB2EAV

Ed reports that finances continue to be in good shape.

REPEATER REPORT

146.745 Repeater is intermittent.

VE REPORT – Ed, WB2EAV

One applicant took the Technician exam and passed. We had the full complement of VEs: WB2EAV, KD2EXM, WB2QGZ, KC2YRJ, WB2IKT.

GARC NETS: Net Controller Karen W2ABK **40 Meters: 7.289 MHz at 7:30 AM EST Sundays**

2 Meters (repeaters) Thursdays: 146.745 MHz (-600 kHz) at 8:15 PM

145.330 MHz (-600 kHz) at 8:30 PM. Tone for both repeaters: 136.5 Hz.

ARES/RACES NETS: Mondays.

PROGRAM:

WEBSITE

The GARC web site can be found at <http://www.qsl.net/wa2lqo>. Webmaster is Pat Masterson, KE2LJ. Pictures of GARC activities, archives of newsletters, roster of members, and other information about the GARC may be found there. Please inform Pat Masterson if you need to delete, update or edit your roster information.

MEETINGS

Board and General Meetings are now combined. Unless otherwise notified, meetings start at 5:30 PM on the FOURTH Wednesday of the month, at HAYPATH ROAD Town Park in OLD BETHPAGE.

[NO meeting for January 2019]

GARC Officers:

President: Ed Gellender, WB2EAV 516-507-8969

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Vice President: <open>

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WA2LQO Trustee: Ray Schubnel, W2DKM Retiree

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NEWSLETTER CQ de WA2LQO is published monthly by the GARC for its members and friends.

WEBMASTER Pat Masterson, KE2LJ Retiree 813-938-4614 Pat-Masterson@tampabay.rr.com

GARC VE EXAMS

We normally proctor exams for all classes of ham licenses on the second Tuesday of each month, starting at 5:30 PM, BUT sessions may be cancelled if no applicants make appointments. The fee is \$14. All applicants must pre-register with Ed Gellender

wb2eav@yahoo.com All new applicants should be aware that they must write their Social Security number on the application form if they have not gotten an FRN number. Applicants for an upgrade must leave with the examiner a copy of their current license. All applicants must show a photo ID such as a driver's license. Study material may be obtained from ARRL-VEC at <http://www.arrl.org>, or W5YI-VEC at <http://www.W5YI.org>. All VECs use and update the same Q&A pools.

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