

# CQ de WA2LQO

The official voice of the Grumman Amateur Radio Club  
June 2012 Volume 85 Number 6

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FIELD DAY June 23<sup>rd</sup> to June 24<sup>th</sup>, 2012  
See President's Note for information

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## COMMUNICATIONS SYSTEMS (Continued from May 2012)

By Bob Wexelbaum, W2ILP

Since it is necessary to interpret the conventions that Dixon uses, we now have to define various modulation modes as they apply to Spread Spectrum.

**Direct Sequence Bandwidth.** All direct sequence signal bandwidths are assumed to be equal to a 3 dB bandwidth of their spectrum. That means if we take the entire bandwidth used and measure it at the bandwidth that is 3dB below the peak signal voltage amplitude, then that will be the bandwidth we will be using in all of Dixon's conventions. Each bandwidth will vary, depending on the type of modulation that is employed such as biphase, quadriphase, or minimum shift keying. We must introduce a calculus equation here, only if we want to be strictly correct when we define the noise bandwidth ( $B_n$ ).

$$B_n = \int_{-\infty}^{+\infty} |g(f)|^2 df$$

For the modulation waveforms described the noise bandwidth is:

<u>Mode</u>	<u>Noise Bandwidth</u>
Binary Phase Shift Keying = BPSK	R code
Quadrature Phase Shift Keying = QPSK	R code
Offset quadrature Phase Shift Keying = OQPSK	R code
Minimum Shift Keying = MSK	0.61 R code

Note that for three of the modulation modes the noise bandwidth is equal to R code, which is the code rate. The process gain is thus:  $10 \log [R \text{ code} / R \text{ data}]$

This is estimated in order to compare the process gain for the different modes.

**Frequency Hopper Bandwidth.** Frequency hoppers are assumed to have  $BW_{rf}$  equal to  $m$  times the channel bandwidth, where  $m$  is the number of channels available.

**Information Rate.** The information rate is a function of the type of information transferred over the links discussed, and is the minimum bit rate necessary for satisfactory reproduction of the information at the receiver. For telephone quality voice transmission 3 kHz is the analog bandwidth. Data are consistent with the minimum rate sufficient to convey the analog or digital data. Data rate representing an analog signal is at least the Nyquist rate, or 2 bits per Hertz. The actual rate depends on the analog-to-digital conversion technique used.

**Chip Rate.** The chip rate is equivalent to the code generator clock rate or, in frequency hopping systems, the hop rate.

**Post-correlation bandwidth.** The signal bandwidth following the receiver correlation process is the two-sided information bandwidth produced by the baseband modulating signal or the frequency hopping carrier

It is not my purpose to describe many of the SS techniques that are presently used for commercial and military applications. I will, however, eventually make comparisons with the most common digital modes that are now being used by hams, mainly on HF or VHF radio frequencies. FCC approved wider band techniques may only be used at microwave frequencies. It is technically possible to use wide band SS on frequencies where

amateur radio is shared with other services and signals may be transparent to each other. FCC approval must be obtained for experimental work. We cannot legally recommend using systems unknown to the FCC, which are intrinsically difficult or virtually impossible to monitor without standard approval and knowledge of their protocol.

This very week an ARRL bulletin described frequency sharing of a microwave ham band. It is the 2360 – 2400 MHz Amateur Radio band that will be involved. As of May 24<sup>th</sup>, 2012 there has been an expansion of the Part 95 Personal Radio Rules to allow medical devices to operate on a secondary basis in this Part 97 Amateur Radio band. The medical devices involved are called Medical Body Area Networks (MBANs). MBANs monitor patients using wireless networks, which the FCC rules say will not be allowed to interfere with amateurs, but must accept interference from amateurs who are designated the primary users of 2390-2395 MHz and 2395-2400 MHz frequencies. ARRL CEO, Dave Sumner hailed this as a good decision, because using those frequencies for commercial wireless broadcasting would be a disaster. Why? Because the MBANs will probably be using Spread Spectrum techniques that will enable them to be virtually transparent. In my opinion, hams should also be encouraged to use wide band SS on those microwave frequencies.

(To be continued)

### **SILENT KEY**

**W2ML**, Stephen Mendelsohn of Dumont, NJ passed away on May 23<sup>rd</sup>, a victim of pancreatic cancer at the age of 67. Steve was a 30 year veteran of the US Navy, rising to the rank of Chief Petty Officer. Steve was a protégée of Harry Dannals, W2HD, and served as his Vice Director of the Hudson Division from 1983 to 1987, when he replaced Harry as Hudson Division Director. In 1996 the ARRL Board of Directors elected Mendelshon as its First Vice President, where he served until 2004. Always interested in any public relations work which could publicize ham radio, Steve organized hams to provide radio coverage of public events, serving for many years as Communications Director of the NYC Marathon and the National Football League. He was aided by his XYL, Heidi, W2MLW. Steve made many presentations at the GARC, QCWA and other clubs in NY; notably one delivered at Grumman in 1983, featuring a controversial video Steve had made for CBS of the Pope's visit to Central America. Made at the time of the Nicaraguan Contras, was never aired because the Pope had traveled on a US military vessel, yet we were privileged to see it. This made us all aware of Steve's abilities when it was time to vote in ARRL elections. Steve was always interested in the *number* of hams in the GARC, our Division, and the entire USA. He believed that a large number of licensed ham operators would bring political clout, and thus was the prime necessity for the survival of the hobby. While serving as ARRL Vice President, Steve became famous with hams worldwide for stating the question, "Is Morse Code a religion?"

### **PRESIDENT'S NOTE by Ed Gellender, WB2EAV**

I was at the Memorial Day parade in Plainview, and stayed for the ceremony afterwards. A local resident was honored for his World War II service record and bravery. When I heard his name, I took a long close look, and afterwards I went up to him and said, "Howie, in all the radio club meetings we've been at together, you never told me you're a war hero." W2QUV responded, "I guess it just never came up."

You probably saw above about the passing of Steve Mendelsohn, W2ML. We were friendly back in the 70s, when he was WA2DHF. Then I watched from afar as he got the communications at the New York City Marathons to be done by hams; a tremendous public relations coup. He later served with the ARRL in various capacities (see above) for some years, but to me it all pales in comparison with his great achievement with the NYC Marathon. We'll miss you Steve.

**Field Day:** We will have two stations, using 20 and 40 Meter dipoles through the trees; Phone and CW by operator preference. Meet at 10 AM on Saturday June 23<sup>rd</sup> to set up for the 2 PM start at the Town of Oyster Bay Haypath Road Park....NY 135 (Seaford Oyster Bay) exit 9 – Broadway, Bethpage. From the southbound exit go left twice; northbound simply go straight. Continue ¼ mile north on Plainview Road to the traffic light at Haypath Road. Turn right and go ¾ mile to the park on right. (The traffic light at Old Bethpage Road is 1/8 mile past).

Ed, WB2EAV

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**GRUMMAN AMATEUR RADIO CLUB**  
**MINUTES OF GENERAL MEETING 5/16/2012**

By Karen, W2ABK, Secretary (not present)

The meeting was called to order by Jack WA2PYK

**TREASURER'S REPORT – Ed, WB2EAV**

Finances continue to be in good shape.

**REPEATER REPORT – Gordon, KB2UB (not present)**

145.745 is noisy.

**NET REPORT – Karen, W2ABK (not present)**

Thursday night net at 8:15 PM on 146.745 MHz had 1 check-in and was noisy..

Thursday night net at 8:30 PM on 145.330 MHz had 3 check-ins.

Sunday morning net at 7:10 AM on 7.289 MHz had 3 check-ins.

Sunday morning net at 7:20 AM on 14.289 MHz had 2 check-ins.

**VE REPORT – Bob, W2ILP (not present)**

There were no registered applicants; Therefore there was no April VE Session.

**OLD BUSINESS**

We need programs for our meetings. We will see if NLI SM Mike Lisenco N2YBB can join us for our picnic in August.

**NEW BUSINESS**

Town of Oyster Bay Haypath Road Park has been reserved for Field Day. See President's message for FD reminders and directions.

**PROGRAM**

New member, Christian Lombardo, (no call yet) showed a rocket that he has been working on. He is active in rocketry clubs that usually launch rockets upstate. These rockets are larger than the rockets commonly used by kids for school or Boy Scout projects; Launch sites must be far from air traffic lanes, because the rockets may reach altitudes exceeding 10,000 feet. Power comes from pre-packaged solid fuel propellants in standard sizes designated by a letter. Sizes A, B, and C are typically  $\frac{3}{4}$  inches in diameter and up to 4 inches long. Size D is about 1.25 inches in diameter and 4 inches long. The rocket we saw uses a size G engine that is about 2 inches in diameter and 10 inches long! The rocket body is a cylinder of balsa wood, 3 feet long and 4 inches in diameter. Its tapered nose cone adds another foot, and fins bring the outside diameter to about a foot. Christian painted it in an attractive matte silver...wonder how that will hold up. Rockets have a feature that enables the opening of a parachute by blowing off the nose cone where the parachute is stored. The parachute is necessary so that the rocket can descend slowly and not do damage. Christen showed us a tiny altimeter used to delay deploying the parachute. Other gadgets include miniature cameras and radio control links. Radio control with enough RF power to reliably reach high altitudes often uses the ham bands and most participants have licenses.

**GARC WAG NETS: HF: 7.289 MHz at 7:30 AM EST Sundays (Early bird 7:00 AM EST)**

Net Controller: Eugene, W4JMX

As per Gene's recent message, operation on 14.289 MHz or 21.289 MHz may be attempted if 40 Meters is not usable. Comments or suggestions may be e-mailed to Gene. His e-mail address is:-

[w4jmx@earthlink.net](mailto:w4jmx@earthlink.net)

**2 Meters (repeaters):** Net Controller, Karen, W2ABK **Thursdays: 146.745 MHz at 8:15 PM**  
**145.330 MHz at 8:30 PM**

**Both repeaters (-600 kHz) and 136.5 Hz tone.**

**ARES/RACES NETS: Mondays.**

**MEETINGS:** General Meetings of the GARC are held on the third Wednesday of each month, starting at 5:30 PM, at the Ellsworth Allen Park in Farmingdale. Driving directions and map can be obtained from <http://www.mapquest.com>. It is suggested that the GARC web site be checked to be certain of the meeting location, which may change after this newsletter is distributed. Board meetings are held a week before the General Meeting at the Bethpage Skating Rink Center.

**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.

### **INTERNET LINK OF THE MONTH FOR INTERNERDS**

The link for this month is:- <http://www.youtube.com/watch?v=neHreW-PNtw>

If you have trouble copying the above you can Google up “W5IG Cool” and it will take you to a linking description that will get you there. Be sure to turn on your audio.

I was informed of this YouTube presentation by Lee Cheever, W5IG himself. He is a Mensa member and we both belong to the Amateur Radio Special Interest Group (Ham sig) of the Mensans. The Mensan special interest groups are called “sigs.” Here is what Lee wrote in his e-mail to the Ham sig members: “At the risk of blowing my own horn, you may want to send this to some of your members. Good for a laugh. 73, Lee, W5IG.

From this you can see that Mensan Hams are not only do-it-themselves innovators, but that they have a sense of humor that might be lacking in some who may take our hobby much too seriously....I think...at the risk of blowing my own horn by association. --w2ilp--

### **PUZZLE**

*Last month I presented this question, taken from the Amateur Extra Class Exam. .*

What is the definition of the term telemetry?

- A. One-way transmission of measurements at a distance from the measuring instrument.
- B. A two-way interactive transmission.
- C. A two-way single channel transmission of data.
- D. One-way transmission that initiates, modifies, or terminates the functions of a device at a distance.

The correct answer is A.

*This month I will again ask a question that is taken from the Amateur Extra Exam.*

When may the control operator of a repeater accept payment for providing communication services to another party?

- A. When the repeater is operating under portable power
- B. When the repeater is operating under local control
- C. During Red Cross or other emergency service drills
- D. Under no circumstances

**GARC Officers**

President: Ed Gellender, WB2EAV M/S:X08-14 516-575-0013 [edward.gellender@ngc.com](mailto:edward.gellender@ngc.com)

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Vice President: Gordon Sammis, KB2UB Retiree 631-666-7463

Secretary: Karen Cafalo, W2ABK 631-754-0974

Treasurer: Ed Gellender, WB2EAV (see above)

WA2LQO Trustee: Ray Schubnel, W2DKM Retiree

1 Yr. Board Member: Jack Cottrell, WA2PYK Retiree 516-249-0979

2 Yr. Board Member: Dave Ledo, AB2EF

2 Yr. Board Member: Jack Hayne, WB2BED

2 Yr. Board Member: George Sullivan, WB2IKT

**Newsletter**

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Editor: W2ILP 631-499-2214 [w2ilp.radio@gmail.com](mailto:w2ilp.radio@gmail.com)

Contributing writers: All GARC members (we hope). To submit articles or ham equipment advertisements contact the editor. Articles will only be edited when permission is granted by the author.

**GARC Webmaster**

Pat Masterson, KE2LJ Retiree 813-938-4614 [Pat-Masterson@tampabay.rr.com](mailto: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 5:00 PM. The exams are given at Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY in room: Long Beach #5. Ham Exams are: Element 2 – Technician, Element 3 – General, Element 4 – Amateur Extra Class. All applicants must pre-register by contacting W2ILP. Time and location of exams are subject to change. If there are no applicants VE sessions will be cancelled. The fee for 2012 remains \$14 for all exams taken at one sitting. New first time applicants should be aware that their Social Security Number will be required on the application form unless they register with the FCC for an FRN. Applicants for an upgrade should bring their present license and a photocopy of it. All applicants should bring picture ID such as a driver's license. Study material may be bought from the ARRL-VEC or W5YI-VEC <http://www.arrl.org> or <http://www.w5yi.org>. All VECs use the same Q & A pools. The Amateur Extra Class Exam will be using a new set of Q & As, starting on July 1<sup>st</sup>, 2012. Study guides for the new Extra Class test were released on January 2012.

**Commercial FCC Radio Operator Exams**

We are certified by the National Radio Examiners to administer exams for all classes of FCC commercial radio operator and maintainer exams. All Commercial Operator License Examiner Managers (COLEMS) use the same commercial license pools. Administrating fees vary. For information or to register contact W2ILP.

**Editorial**

Last month I had reported that there would be an Armed Forces Day Crossband Military/Amateur Radio Communications Test on 12 May 2012 and I printed a link to the complete schedule. I don't know if any other GARC members participated. Propagation conditions seemed poor. I admit that I did not spend much time with this event. I managed to work only three of the military stations. All were on 40 Meters using 100 Watts PEP. They were NBL in Groton, CT; NWVC aboard USS LST 325; and WAR in The Pentagon, Washington, DC. QSLs were sent to all. I am in the process of improving my HF station with the capability of running 600 Watts PEP. The present trend has, however, been to run low power, even QRP. In my opinion good operators don't try calling the stations that they can hardly hear. They only run high power when necessary. Propagation conditions have not been very good lately.

We have three applicants as of this time. Thus there will be a June VE Session.

Grumman Amateur Radio Club  
Sixty Eight Years 1944-2012  
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FIRST CLASS MAIL

*Do Not Delay*

**A Message from “Bad Apple Juice” WA2BAJ**

*We miss Joe Scott WA2BAJ, armchair philosopher, long-distance cyclist, and regular on the Thursday night net. He now resides in North Carolina and his e-mail address is: [jescott@triad.rr.com](mailto:jescott@triad.rr.com). We received a nice email update:*

Just a note to say thanks for staying in contact, especially to Karen for keeping me informed. I miss the Grumman group very much. I don't like the heat here, but the cost of living is about 1/3 of what it is up there. I will be 75 years old in September and am legally blind; I can't see well enough to do electronic work or drive anymore, and can't go too far on my bicycle.

Still, I ride 7 to 15 miles a day. But that is on very hilly streets that were not exactly built for cyclists. There are absolutely no shoulders on neighborhood interconnecting roads, with one lane each way and always fast moving traffic.

Have to run now to fix a flat bike tire. I ride at 5:00 AM because the sun is too hot to ride later in the day. Please extend my regards to all and give them my email address. Sincerely, Joe WA2BAJ