CQ de WA2LQO

The official voice of the Grumman Amateur Radio Club

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FIELD DAY JUNE 25-26 2011

See Messages on Page 2 and Page 5 for details.

COMMUNICATIONS SYSTEMS (Continued from April 2011)

By Bob Wexelbaum, W2ILP

Last month I devoted most of this newsletter to the recent nuclear disaster in Japan and to the Japanese in general. Although more than 70% of amateur radio equipment used worldwide is now designed or manufactured by Japanese engineers, the subject of this newsletter is amateur radio, as it applies more directly to the interests of our club. Thus I will now return to the subject of Communications theory.

We had discussed AM, FM and PM techniques and the sampling of those modulation modes by *pulse* time multiplexing. There are various ways that modulation modes may be combined in order to take advantage of packing more information than a single digital bit within each pulse time. One such method is *Pulse-Amplitude Modulation* (PAM). Although Hams use AM and PSK modes, they don't directly use PAM, but PAM should not be unfamiliar as it has been used by all commercial telephone systems. If a ham repeater is tied into a telephone system for control purposes or to enable phone patches, it is ultimately using PAM. Multiplexed PAM samples of many PAM signals are interlaced and separately recovered by the virtue of the fact that they are sampled at different times and thus PAM is also an example of a *time-division-multiplex (TDM) system.* If we send a TDM-PAM signal over telephone wires, no further processing needs to be undertaken, but suppose that we want to transmit a TDM-PAM signal from an antenna to an antenna, as we would for a cell phone. It would then be necessary to modulate TDM-PAM on a higher frequency carrier. Cell phones us microwave RF carrier frequencies. Remember that the carrier frequency must be much greater than the highest frequencies that we intend to modulate with. Modern technology has enabled sampling rates to be very high, but it is not sufficient to simply sample the modulation, because the time between samples must be accounted for in a way that does not leave blank analog modulation drop outs between samples. This is solved by *holding* the modulation at the AM, FM and/or PM level that it was at the end of each previous sample by using *sample and hold* hardware circuitry at the receiving end.

Up to now we have been considering only *analog* basic modulation modes, in which the carrier is a sinusoidal wave or pulse waveform and the modulation *continuously* varies the amplitude or timing of the carrier. We will now consider a type of modulation which is *digital* rather than *analog.* This falls under the heading of *Pulse Code Modulation (PCM).* An example of PCM is modern HDTV. The advantage of a digital signal is that it is much easier to recognize a weak digital signal within background noise than it is to recognize a weak analog signal within the same level of noise. This concept applies for any type of signal; audio, video or data. In an analog system, once noise is introduced anywhere within a communication channel we are stuck with it. PCM systems beat this limitation by *quantization* of signals. When we digitize a signal whose output would be [m(t)] in analog, we develop a signal whose output is [m sub q(t)], which is called the quantized waveform. It is actually a staircase waveform whose steps hold at various levels: m sub-2, m sub-1, m sub0, m sub1, m sub2, …,etc. This signal either does not change or it changes in a quantum jump [S] called the *step size.* I have been throwing a lot of definitions at you. Note that some people who want to impress us with their knowledge throw out definitions to impress us with popular "buzzwords" rather than holding definitions strictly

applicable to the subject at hand. It is this type of person who may take us off on a "Quantum leap" into the mechanical mysteries of sub-atomic physics rather than a "Quantum jump [S]" of a PCM step size, which is our present subject. Avoid being confused by such noise. Although a quantized signal is an approximation of the original analog signal, its resolution can be improved by reducing the step size and thereby increasing the number of allowable levels. Eventually the human eye or ear will not be able to distinguish the quantized signal from the original. For color TV systems this requires 512 levels. 64 levels can produce good recognizable pictures. Only 10 levels may be needed for sending decimal data to the IRS by the numbers.

Delta modulation (DM) is a technique by which analog signals can be encoded into binary digits (bits). DM is thus another example of a PCM step system. DM is easier to modulate and demodulate without conversion, using computer logic which is intrinsically binary. DM has some disadvantages when compared to other modulating schemes, because a bit has a defined weight numerically; thus DM can result in overloaded conditions when the step rate rise cannot be achieved due to hardware limitations or when the arithmetic result can exceed the numerical range of the bit resolution. Adaptations involving scaling ratios may be made in these cases, just as they are in well designed analog computers. Scaling selections must be signaled so that they are expected at the receiving end when they are being sent at the transmitting end. This is the same type of thing that must be accomplished when switching from lower case to capitals with a keyboard.

(To be continued)

PRESIDENT'S NOTE by ED GELLENDER, WB2EAV
June 2011

Field Day is almost here – the weekend of June 25 and 26 – and it is now time for us to get things in place. This year we are doing things a little differently. Northrop Grumman has made using their generator such a nightmare that we have made the decision to operate Class 1D off commercial power mains. It isn't quite the way it is supposed to be, but it is the only viable path open to us. The crew has also been losing interest in pulling those all nighters, and no one was upset when we learned that our new arrangement requires us to go home from 9 PM until 9 AM.

We will be operating one station on two bands by stringing 20 m and 40 m dipoles through the trees, changing antenna connections if we change bands. I assume we will start setting up about noon Saturday. Come to the general meeting on June 15 (pg 3) to further discuss.

We will be in the park building at the Haypath Road Park. Best way to get there is off NY135 (Seaford - Oyster Bay Expressway) at Exit 9 (Broadway, Bethpage). From the southbound exit turn left; northbound, go straight. Proceed past the NY135 entrance and continue a quarter mile to the traffic light on Haypath Rd. Turn right and go 3/4 mile to the park on the right. You will see the traffic light at Old Bethpage Rd about 1/8 mile ahead. It is easy to miss so take it slow.

I have received some recent news. When Congressman Peter King was supporting legislation that would severely impact the 420 MHz band, the ARRL dispatched a team of local people to inform Rep. King that if the 420 MHz band was opened to commercial bidders the public service activities of hams could be compromised. Upon discussion of the problem, it was agreed that 420 MHz should remain a ham band.

This is a civics lesson for us all. In an era of overheated political maneuvering, it is so refreshing to see such an elegant example of people getting together to make the system work. I believe that is what lobbying was once supposed to be, although you might not recognize it anymore.

Ed, WB2EAV

GRUMMAN AMATEUR RADIO CLUB
MINUTES OF GENERAL MEETING 5/18/2011
By Karen, W2ABK, Secretary

The meeting was called to order by Gordon at 5:45 PM

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TREASURER'S REPORT – Ed, WB2EAV

Finances continue to be in good shape.

REPEATER REPORT – Gordon, KB2UB

The Bethpage repeater is noisy. Hauppauge Repeater is good. *On 5/19 all who checked in agreed that the Bethpage Repeater was not noisy, but were uncertain as to why it appeared to be improved.*

NET REPORT – Karen, W2ABK

Thursday night net at 8:15 PM on 146.745 MHz had two check-ins. It was noisy.
Thursday night net at8;30 PM on 145.330 MHz had a nice turn out.
Sunday morning net at 7:30 AM on 7.289 MHz had a nice turn out but was difficult copy.

VE REPORT – Bob, W2ILP

Five applicants applied; 4 passed Technician exams and 1 upgraded to General.
Four VEs were present: W2ABK, AB2EF, WB2IKT, and W2ILP

OLD BUSINESS

We need programs and guest speakers for our meetings.

NEW BUSINESS

Field Day will be held at Haypath Park. On Saturday June 25 we will meet at noon to set up equipment and stay until 10:00 PM. On Sunday, June 26, we can meet at 9:00 AM and stay until 3:00 PM.

PROGRAM

Discussion about GARC Field Day 2011.

GARC NETS: 40 Meters: 7.289 MHz at 7:30 AM EST Sundays
Net Controller: Eugene, W4JMX
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.
GARC Net Controller Karen, W2ABK
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 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.

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

This month I would like you to view a video that has been circulated on the Internet and has been a cause for a diverse and controversial thread on QRZ Ragchew. The subject is: Americans Arrested at the Jefferson Memorial – for Dancing. The web address is: http://youtube.com/watch?feature...&v=8jUU3yCy3uI

I posted messages about this controversial subject on QRZ Ragchew and I hope that you may find the time to read my humble opinions there. There is not room here to express all that I had to say. What has this got to do with Ham Radio? I'll try to explain here. There are always going to be *REBELS WITHOUT A CAUSE.* These include adults as well as youngsters who have no political agenda… (Unlike Tea Party rebels or Anti-Tea Party rebels.) These are rebels who generally hate to be regulated by any authority. They may hate school. They may hate teachers. They may hate the government in general. They may hate the police. They don't know exactly why they hate authorities but they do…because they form groups with peers who enjoy baiting police or testing their supposed right to exhibit anti-social behavior publically. It is a shame to see cops OVERREACT to their rebellious but harmless behavior and take the bait. Good teachers, and scoutmasters must learn how to deal with the rebels whose only cause is to trick them. Teachers cannot wrestle the kids to the floor or handcuff them and arrest them, as the police did in this video. They can't cite the Constitution or what good respectful behavior our founding fathers may have expected at national parks or monuments. ..or at public schools…or club meetings. At the present time there are many intelligent kids who do not want to be licensed hams…not because the ham tests would be difficult…not even because the ham equipment would be expensive…BUT because they are rebels without a cause…except for the cause that they don't want to do anything that will be strictly regulated by government rules (such as FCC Part 97). They seek attention not by the honor of being trusted to transmit with duly authorized call letters…but by "acting up". The media took the bait in this case and gave us the YouTube "public interest" presentation. I guess you could say that I also took the bait by writing about the foolish overreaction of the police here.

PUZZLES

Last month I asked two history questions instead of the usual cryptograms. Here are the questions and their answers.

-In the 1970s American engineers were being lectured about what were called "Quality Control Circles". Who was the engineer who was falsely believed to have introduced quality control to the Japanese?

Answer : William Edwards Deming (1900 – 1993)

-At a time when nobody else was willing to risk money for drilling for oil in Libya, who was the famous man who made a deal with Gadhafi to permit drilling, and establishing a successful source of oil which became very profitable for himself and for Gadhafi?

Answer : Armand Hammer (1898 – 1990)

Both of the above men had very interesting careers. I suggest that you Google those up if interested.

The puzzle for July 2011 is to again identify famous men.

1) Who is the man who wrote more electronics books and articles, about electronics projects which "do-it-yourself" amateurs could experiment with, than any other man could ever claim to have authored? He isn't a ham and he doesn't believe in Darwin's theory of evolution or in Global Warming.

2) Who is the man who edited and sold magazines for hams that competed with ARRL's QST? What is his call sign? He never changed his call when he moved to a different call district in the days when everyone else who relocated to a different district had to apply for a new call sign.

FIELD DAY 2011 by Jack Cottrell

Our location at **Haypath Park** on Haypath Road is just west of Round Swamp Road in **Old Bethpage**. See p 2.

Saturday – June 25 12:00 Noon – Set up antennas
2:00 PM – 10:00 PM – Operation
Sunday – June 26 9:00 AM – 2:00 PM – Operation
2:00 PM - Pack up and leave.

We will be operating from inside of an air conditioned building.

Come to the general meeting on June 15 at Allen Park in Farmingdale for final arrangements.

Editorial

We received a message from Bert Wengler, K2DOD. Bert was the GARC president at the time that I joined the GARC. It was Bert who encouraged me to upgrade to Extra Class and to become a VE. Bert plans to relocate to California and not to be active on the air in the future. He has offered to donate his ham equipment to the club or to any member who may need it.

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Newsletter

CQ de WA2LQO is published monthly by the Grumman Amateur Radio Club for its members and friends.
Editor: W2ILP 631-499-2214 W2ILP.RADIO@gmail.com This is new E-mail address.
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

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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 2011 is $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.

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.

Grumman Amateur Radio Club
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RECENT NEWS

The melt down of the nuclear plants in northern Japan is no longer front page news here in the USA…but at the time of this report, despite everyone's hopes, radiation levels are not getting much lower there. All three plants are now known to have melted cores due to overheating. A 72 year old Japanese engineer, Yasutera Yamada, has volunteered to help by working at the contaminated plants but so far the Japanese government won't permit him to do so. Such older Japanese who volunteer to work in contaminated areas believe that since their life spans are now limited they will probably die from other things before the slow acting cancers that may result from exposure to radiation will sicken them. I dunno if any American seniors would volunteer for such risky exposure.

The most recent news from Germany is that Spanish cucumbers may be causing e-coli fatalities there. This is being rapidly researched because bacteriological hazards are more quickly fatal than any nuclear or alleged RF hazards. Meanwhile, Germans have responded to public pressure and set a date when they plan to shut down all of their nuclear plants.

European scientists are now blaming frequent cellphone use as a cause of brain cancer, based upon statistical evidence. I had discussed the possibilities of RF hazards here in the past. More scientists now are coming to the conclusion that RF radiation hazards are cumulative, not just thermal, and frequent use of cell phones probably can cause cancers. [Hands-free devices, even Bluetooth, reduce exposure to radiation …and moving violations; Texting is good as long as you are not driving – WB2EAV]

The Huntington Town board has succeeded in preventing T-Mobile from installing a cellphone repeater on a school and now requires cellphone towers to be at least 500 feet from schools.

A group of NLI leaders including N2YBB, N2GA, W2FSK and WB2OQQ met with Congressman Peter T. King (R-NY) to make him aware of the fact that the 440 MHz ham band may be included in auctions that are planned to sell frequencies to commercial service providers. King was made well aware of the belief that the ham band frequencies are needed for emergency preparedness. Nobody represented the GARC at the meeting. We have no UHF repeater. Surprisingly this political maneuver was not completely endorsed by all at the ARRL. I'll talk more about it next month. – 73, w2ilp--