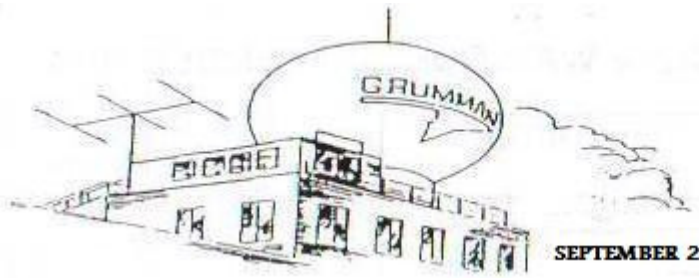

CQ
de WA2LQO
SEPTEMBER 2010 VOL 84 NO. 9

Communications Systems (continued from August 2010)
By Bob Wexelbaum, W2ILP

In order to simplify the concepts which follow we can use two dies (plural dice) to develop a probability distribution. When we throw the dice, each one has only six possible ways of landing, so as to show only six possible results, none of which is more probable than the others. However when we add the spots on two dies we get a very different probability distribution. It is impossible to throw a total of 1 or a total of more than 12, using two dies. All of the possible outcomes are listed below. We must include all possibilities, in order to determine what each final probability ratio will be.

2	{1 and 1)	1 possibility
3	{1 and 2} {2 and 1}	2 possibilities
4	{1 and 3] {3 and 1} {2 and 2}	3 possibilities
5	{1 and 4} {4 and 1} {2 and 3} {3 and 2}	4 possibilities
6	{1 and 5} {5 and 1} {2 and 4} {4 and 2} {3 and 3}	5 possibilities
7	{1 and 6} {6 and 1} {2 and 5} {5 and 2} {3 and 4} {4 and 3}	6 possibilities
8	{2 and 6} {6 and 2} {3 and 5} {5 and 3} {4 and 4}	5 possibilities
9	{3 and 6} {6 and 3} {4 and 5} {5 and 4}	4 possibilities
10	{4 and 6} {6 and 4} {5 and 5}	3 possibilities
11	{5 and 6} {6 and 5}	2 possibilities
12	{6 and 6}	1 possibility

There are thus a total of 36 possible ways that the dice can land. Obviously it is much more probable to throw 7, than it is to throw 2 or 12. The numeric probability of throwing any of the possible sums is a ratio, calculated by dividing each of the individual possibilities by the total number of possibilities. Graphing the results by plotting 2 to 12 on a horizontal axis, and ratios 1/36 to 6/36 on a vertical axis, we can see a probability distribution density function, which might correspond to any cumulative distribution function, not just this simple experiment example with dice. The height of each ratio represents what is called the strength of an impulse. Notice how by connecting the tops f the impulses in the dice probability density graph we can form a curve that will peak at 7, and be symmetrical mirror images below and above 7. Variable functions often have symmetrical density distributions, even when individual outcomes are random. Many naturally occurring experiments or statistical polls are characterized by random variables with a Gaussian (also called *normal*) probability distribution function.. The Gaussian probability is graphically a symmetrical bell shaped curve. You may have heard of such bell shaped curves, devised to show the distribution of intelligence (as calculated by IQ tests) among the many individuals of a large population or in some large demographic group. Such a curve for all humans would (or at least should if the IQ tests are well designed) normally peak at an IQ of 100 and gradually decrease below and above 100. At its extremities are the relatively few idiots and geniuses.

Mathematically there is what is called a *central-limit theorem*, which actually consists of many related theorems which I can not undertake here. The text book for the communication course does not do so either. It only states verbally that the theorems can not be described precisely, nor proven in a course of this level, but it is adequate to note that the central-limit theorem indicates that the probability density of a sum of N independent random variables tends to approach a Gaussian density as the number N increases. Of particular interest to communications engineers is a curve known as the Rayleigh probability density. This curve has a special relationship with the Gaussian density curve but unlike the Gaussian curve it is not symmetrical. The Rayleigh density is defined by f(r) = {(r/alpha)^[e-r^2/2alpha^2]} {0} where r is between zero and infinity or r is less than zero. F (r) is defined as defined as not being zero for positive values of r. The Rayleigh density curve peaks at: 1/[alpha (the square root of e)] . Further descriptions might confuse those who are not mathematically inclined; however hams should be familiar with converting Cartesian to polar coordinates which is part of the process of working with two Gaussian density functions in order to find the probability of receiving a microwave signal that is, for example limited area wise by an antenna pattern or an audio signal that is limited by the acoustical configuration of a room or by the response of human ears.

(To be continued)

PRESIDENT'S NOTE by ED GELLENDER, WB2EAV SEPTEMBER 2010

The club's annual picnic was held in mid-August at the Syosset-Woodbury Park and we had a nice turnout. A good time was had by all. As usual, we had lots of food prepared by a willing crew of expert volunteers. It is a beautiful park with a great picnic grove, which we had all to ourselves. The only downside is that it gets a lot of yellow-jacket wasps, although they did not cause any problems; Apparently they came to enjoy the food too.

Last year we had a very rainy summer and it was no surprise that during the picnic the weather was cloudy, and it started to rain just as we were leaving. This summer has been incredibly dry, so it was quite unusual that it was also cloudy and it started to rain when we were leaving. In both cases the cloudy weather kept things comfortably cool and the rain didn't interfere with anything.. Still it would be nice to explore how a sunny picnic goes…just to see what it is like.

As you know the club has maintained Post Office Box 644 in Bethpage for years and years and years. The last few years it has been my duty to check it every week or so. When the usual annual payment reminder came, the Post Office included a note suggesting that box holders check with the clerks to make sure that the box registration forms are up to date. I thought that is a good idea, as I never got around to removing the names of my predecessors. So, when I got there, I was quite shocked to see that our registration form hasn't been changed for at least 15 or 20 years! That takes the old adage "if it ain't broke don't fix it" to a whole new level.
73, Ed, WB2EAV

CONDOLENCES

Sincere condolences to Tom Lovelock, KC2HNN, whose mother Theresa Lovelock, 75, of Smithtown, passed away on August 23, 2010.

KUDOS

Marking the 20th anniversary of the Americans with Disability Act, Nassau County Executive Edward Mangano honored seven disabled persons. Among those honored was John Jeavons, KA2YIY, who is a technology specialist at Nassau Community College's Center for Students with disabilities.

GRUMMAN AMATEUR RADIO CLUB
MINUTES OF GENERAL MEETING 8/18/2010
By Karen. W2ABK, Secretary

The meeting was called to order by Karen at 4:30 PM.

TREASURER'S REPORT – Ed. WB2EAV

Finances continue to be in good shape.

REPEATER REPORT - Gordon, KB2UB

The repeaters seem to be working OK.

VE REPORT – Bob, W2ILP

Due to a lack of certified CEs the August session was run on Aug. 3 rather than on Aug. 10. A new amateur Technician test was passed and a Commercial applicant passed Elements 2, 3 and 8 to earn a GROL with radar endorsement. VE CEs were Ed, WB2EAV, George , WB2IKT and Bob W2ILP.

NET REPORT – Karen W2ABK, Gordon KB2UB

Thursday night net on 145.33 on 8;30 PM had a few check-ins. Sunday morning 40 Meter net was quiet.

OLD BUSINESS

We are trying to find programs/guest speakers for our meetings. Need more VEs and CEs to be certified.

NEW BUSINESS

John Jeavons KA2YIY's XYL got her ham ticket. Her call sign is KC2ZAO. Congratulations to Mary!

PROGRAM

This was our August picnic at Woodbury/Syosset Park. It had a nice turn out of about 25 people. Jack, WA2PYK brought plenty of hamburgers, hot dogs, cold drinks for all. Everyone had a good time. The picnic ended at 7:00 PM when it started to drizzle.

GARC NETS:

40 Meters: 7.289 MHz at 7:30 AM EST Sundays.

Net Controller: Eugene, W4JMX

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

145.330 MHz (-600 kHz) at 8:30 PM EST Thursdays

Net Controller: Karen, W2ABK

[Tone for both repeaters is 136.5 Hz] **(ARES/RACES) 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 maps can be obtained from http://www.mapquest.com. It is suggested that the GARC website 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.

GARC WEBSITE

The web site of the GARC 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

There is so much information and misinformation on the Internet now that I wonder why there is any need to steer anyone to any specific Internet site. When I started this column the Internet was in a pioneering era, much like TV was in the '50s. Today we get homepages with news headlines, science breakthroughs, sports, human interest trivia, etc. and we can click on or ignore links as we see fit. I prefer MSN as my Internet homepage… others may have other preferences. If we want to research any subject that interests us, we can have Google or Yahoo do a search for us. If we want to find anything related to amateur radio, we can go to the ARRL web site and follow links that are there to many amateur radio club web sites and often get free access to their newsletters or the technical data that many of them have posted. I like QRZ which has various categories devoted to specific ham and non-ham topics. Still… there might be some time when I might want to call your attention to a web site that you might be especially interested in. For those who are interested in ham digital modes, each mode has at least one web site; some where you can comment directly to the digital mode software developers themselves. It is getting more difficult for me to print web site address links here. The addresses seem to be getting longer all of the time, in order to be unique. Sometimes addresses change before this newsletter can be distributed. This makes it more practical for you to use Google or Yahoo search engines rather than any long link address I may print here. I know that it is frustrating to type out long addresses and not get to the desired web page due to an error that might be caused by my typo or yours. Anyway I welcome any suggestions from GARC members of specific web site addresses that can be printed here on radio, science, technology, etc. related subjects that can be hunted up on the wonderful World Wide Web. As always it is my policy to avoid commercial advertising whenever possible. This isn't easy. Americans have had to deal with advertising on commercial radio and TV and it is there on the Internet as well. Those who provide us with most of the stuff on the Internet want to get rich by advertising. We amateurs are not supposed to be supported by endorsing any specific products or services…only the ARRL can be officially excused for advertising their own brand of stuff to us all and even advertising by appending an ARRL membership application as a carbon copy on their version of official certification of proof of passing any amateur radio exam given at ARRL-VEC sessions.

PUZZLE

Here is another cryptogram:

GYINI ZNI AHNLI GYRMUL RM ORVI GYZM TIZGY. YZQI KHJ IQIN LWIMG

ZM IQIMRMU ARGY ZM RMLJNZMPI LZOILSZM? --AHHTK ZOOIM--

Solution to the August 2010 Cryptogram:
IT ISN'T NECESSARY TO IMAGINE THE WORLD ENDING IN FIRE OR ICE – THERE ARE TWO OTHER POSSIBILITIES: ONE IS PAPERWORK AND THE OTHER IS NOSTALGA.
–FRANK ZAPPA—

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All the members of the GARC.
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Pat Masterson at:
Pat-Masterson@tampabay.rr.com

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2 Yr Board Member:	Jack Cottrell WA2PYK	Retiree	516-249-0979
Trustee WA2LQO:	Ray Schubnel W2DKM	Retiree	

STANDING COMMITTEE CHAIRMEN

Contact Chief Volunteer Examiner: Bob Wexelbaum, W2ILP	631-499-2214
Webmaster: Pat Masterson , KE2LJ	813-938-4614

GARC VE EXAMS

We are continuing to proctor exams for all classes of ham licenses on the second Tuesday of each month, starting at 5:00 PM. Normally exams are given at Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY. Room: Long Beach #5. APPLICANTS MUST PREREGISTER BY CONTACTING W2ILP because dates and locations of exams are subject to change. If there are no registrants, sessions may be cancelled. The present ham exams are Element 2 Technician; Element 3 General, and Element 4 Amateur Extra Class. The present fee is $14.00 for all exams taken at one sitting. Applicants for upgrade must bring their present license and a photo copy of it. New applicants must be ready to print their Social Security Number on the application form if they have not been registered with the FCC for an FCC Registration Number (FRN). All applicants must show their driver's license or other picture ID for identification. Study material may be purchased from the ARRL by contacting: http://www.arrl.org or from the W5YI Group by contacting: http://www.w5yi.org . All VECs use the same Q & A pools.

GARC CE EXAMS

We are certified by the National Radio Examiners to administer exams for all classes of FCC Commercial Radio Operator Licenses. All CEs use the same exam pools. Administration fees vary. For further information contact W2ILP.

EDITORIAL

As you can see from the above the format on this page has been altered somewhat. I have been wrestling with MS Word in order to reduce the byte size of the entire newsletter. I hope that I will now be able to include pictures in future newsletters, but this remains a work in progress.

73, Bob W2ILP

GRUMMAN AMATEUR RADIO CLUB
Sixty Six Years 1944 -2010
P.O. Box 0644
Bethpage, NY 11714-0644

FIRST CLASS

DO NOT DELAY