



HARMONICS

1916

South Jersey Radio Association

2014



Help for New Hams

Dan, KB6NU, *cwgeek at kb6nu dot com*

In a box of stuff recently donated to WA2HOM, our amateur radio station at the Ann Arbor Hands-On Museum, there was a book W1FB's Help for New Hams by Doug DeMaw, W1FB. This book hits on just about all the topics that a new ham in the late 1980s would want to know about and W1FB does a great job of walking the new ham through these topics.

Of course, being 25 years old, some of it, is out-of-date, and it doesn't cover some questions that a new ham today would ask. For example, there's nothing in this book about digital modes or using a computer in the shack.

So, I'm thinking of writing my own Help for New Hams. Mine would probably be a little less HF-centric and include advice on joining clubs and how to use a computer in the shack. I am also thinking that maybe I should write two separate versions: an HF version and a VHF version.

At any rate, I've listed the chapters of the W1FB version below. If you have any comments about what I should include in my version, I'd love to hear from you.

- ◆ The Newly Licensed Amateur. This chapter talks mainly about how to choose equipment, but also covers some of the modes that amateur radio operators can use.

- ◆ Your New Equipment—Getting Acquainted. This chapter discusses how to use the features of modern transceivers, amplifiers, and antenna tuners. It also talks a little bit about antennas and SWR.
- ◆ Constructing and Using Antennas. This chapter goes into greater depth on antennas. It discusses the different types of antennas, how to feed them, and how to bring feedlines into the shack.
- ◆ Station Layout and Safety. This chapter covers the practical aspects of setting up an amateur radio station, including desk and chair selection and station wiring.
- ◆ TVI and RFI—Strange Bedfellows. TVI and RFI are less of a problem these days but it's still something new hams need to know about.
- ◆ Operating Problems and Fears. This chapter discusses some of the operating problems new hams face, including honesty in signal reporting, how to operate split and how to work DX.
- ◆ On-the-Air Conduct and Procedures. This chapter discusses more operating procedures, including calling CQ, how to operate via a repeater, and how to ID.

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SOUTH JERSEY RADIO ASSOCIATION

HARMONICS is published monthly and is the official news letter of the South Jersey Radio Association. The SJRA was established on June 16, 1916 and has been meeting continuously since its inception. The club has been affiliated with the American Radio Relay League since 1920.

The SJRA meets each month on the fourth Wednesday, January through September; and usually the third Wednesday, October, November and December; in one of the Meeting Room of the Gibson House at 525 East Main Street, Marlton, NJ 08053. Visitors are always welcome at our general meetings. **"Our Meetings are Smoke Free"**

SJRA operates the K2AA Repeater (145.290 - PL 91.5) located in Medford, NJ and the K2UK Repeaters (146.865 and 442.350 - PL 131.8) located in Pine Hill, NJ. The repeaters are open for use without restriction to all licensed amateur operators.

There are currently over 100 SJRA members active in most all aspects of amateur radio. Membership is by application and is subject to the approval of the Board of Directors. Club dues are currently \$30/yr. for memberships, \$22.50/yr for retired-person membership (62 plus 1 yr membership), and \$15/yr. for additional family members and student membership. Membership information is available on the K2AA Repeater or from Mary Von Lintig, KV2M, 856-772-6475

EMAIL: [sjra at sjra dot org](mailto:sjra@sjra.org) SJRA's web page www.sjra.org
 Mark O'Brien, K2AX, is the SJRA/ARRL VUCC card checker
 Joe Fisher, KC2TN, is the SJRA/ARRL WAS card checker

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Picnic: Debbie Pullaro, W9QWN
Ways & Means: Ray Golley, N3RG
Property: Jon Mac Millan, W2MC

Harmonics Staff:

Publisher/Editor: Ted Groke, W2TAG
Alternate Editor: Vacant (Please Volunteer) I will teach you all you need to know. Ted, W2TAG
Circulation: Mary VonLintig, KV2M;
 Jim Vecchiola, KR2T

 ★ Harmonics is now available on the WEB in pdf format at: ★
 ★ <http://www.sjra.org> ★
 ★ South Jersey ARRL Section News is available on the WEB at: ★
 ★ <http://www.arrl.org/sections/?sect=SNJ> ★

LOCAL WEEKLY NETS

Monday	K2AA, Medford	145.290 @ 8PM
Thursday	Various Locations	28.405 @ 8PM

Harmonics Deadline

Articles submitted for the next Harmonics will be accepted until Monday, June 9, 2014. Email: ted.w2tag@gmail.com

SWAP SHOP - For Sale/Wanted ads are free of charge and are accepted for Amateur Radio related items only. While ads are not restricted to SJRA members, there is only limited space available and members have priority for listings. No items will be accepted for inclusion in the Swap Shop from commercial vendors or traders. All ads must be submitted at least three weeks prior to the scheduled SJRA general meeting date.

GENERAL ADVERTISING - Limited commercial advertising is accepted on a space available basis. Annual advertising rates range from \$25/yr (Min 1/8 page) to \$200/yr (Full Page). Information is available from Ken Botterbrodt, K2WB.

Meeting Minutes

General Meeting 4/24/14

All officers and directors present except K2WB, N3RG, AC2FO, and W9QWN. The meeting was opened at 2000 by Jon, W2MC, with a flag salute. Minutes of the March meeting were approved as read on a motion by K2WJL/ KD2ADL. No Treasurer's report.

New members by Mary, KV2M: Jim, K2UAS, and Bob, KD2GEO. As historian, she presented a certificate from Apollo 14.

Health & Welfare by Kathy, KM2KME: Birthday cards out for the month. Programs: April, N2EI on CW; May, Field day start (since changed to Storm Robotics; June, FD start; July FD Wrap. Kathy then read a farewell message as she will be relocating to Texas.

VE Team: Six candidates, all passed.

Nets by WY2J: Things have slowed again and the repeater had one bad night. He still needs 1 net control on 10 meters and one on 2 meters. Web team, by IRA, W2IRA: not to new server yet, but delay allowed us to avoid the heartbleed virus.

Old Business: None

New Business; ARRL is celebrating 100th Anniversary with special calls and a points contest for those connecting with the most stations, all stations may have different point values. SJRA safety article on tower safety to be in June QST.

Burton Sampley reported he had a new call, now NJ2IT.

Recess at 2025, followed by Skip, N2EI's presentation on CW.

Board meeting of 7 May 2014

All members present except K2WB and W9QWN. We opened at 1950. Minutes of the April board meeting were approved as printed, motion N2HQL/KM2KME.

Ray, N3RG, made the treasurer's report, 100 paid up members to date. The report was accepted, motion AC2FO/KR2T.

New members, by Mary, KV2M: Whitney Myers, KB2ZTL; John Conroy KA2KCA. Both were accepted. Motion N3AVT/W2IRA. Historian; Mary presented a picture from 1948/49 taken in the press box at Collingswood stadium, and a group shot (not identified) showing W2PAU operating the projector.

Health and Welfare: Kathy will take care of the May cards, but we need a replacement. Programs: May, Storm Robotics; June, field day last minute prep, July FD wrap up.

Kathy, KM2KME, read her letter of resignation. Dennis reports no other communications.

Web team: recruiting new assistants; New passwords will have to be changed when new server is established.

A letter of thanks will be sent to Bruce Eichmann for his service in making badges for the club. Motion by KV2M/KV2R. A volunteer has said he could possibly assume the position if his equipment will handle the job.

Motion to adjourn, KM2KME/AC2FO

HAM TECH

Vol 5 No. 5 by John - WY2J

wy2j at arrl dot net

Widely Used Digital Text Modes

Part 1 of 4: Radio Teletype - RTTY

Introduction - Many digital text modes are available to the modern day Ham thanks to the integration of the Personal Computer with a high quality sound card and modern SSB transceivers. In this four part series I will explore in depth the three most widely used digital text modes, RTTY, PSK-31 and JT65HF, as measured by how many of them you find on the air today in contests, chasing DX and general rag chews. If space permits I will include a fourth mode yet to be selected. My objective is to explain how each works, the modulation used, the coding employed, error correction if used and each modes performance and limitations in Ham Radio. In part 1 I will start with the oldest automatic sending and printing mode RTTY.

A Little History - RTTY has its heritage in the wired electro-mechanical teletype machine developed in the early 20th century that replaced Morse telegraph operators with typists and doubled or tripled the message speed. The teletype machine was a marriage of the telegraph technology with the electric typewriter and was widely used by Western Union, RCA Globecom and the Bell system to transmit text messages worldwide, much like you do today with your cell phone but at much greater cost and with the delay of a delivery person in the loop.

The surplus Western Union machine shown in Figure 1 is what Hams used for RTTY in the early 1960s. It is taken from the 1967 ARRL Handbook. The machine is elec-

tro-mechanical in operation containing relays, motors, gears, escapements and other mechanical devices but no electronics. It operates up to 60 wpm with a good typist. Other models could reach 100 wpm.

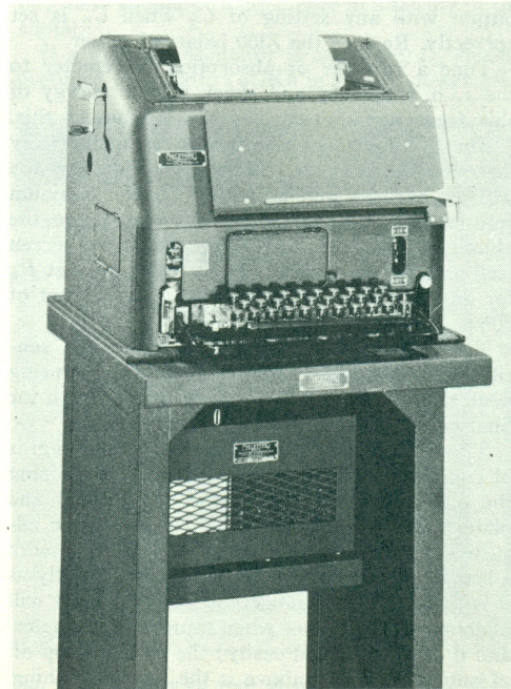


Figure 1, Western Union Model 15 Teletype Machine from the 1940s to 1960s era.

The Baudot Code - Since Ham Radio RTTY started with the use of surplus teletype machines it inherited the 5 bit code that they used. Known as the baudot code it encodes the keystrokes of the machine into a 5 bit 32 value binary code. These 5 data bits are preceded with a start bit and followed with a stop bit. For the 60 wpm machines the start bit and the 5 data bits are each 22 milliseconds long. The stop bit is usually 31 milliseconds but may be as short as 22 millisec-

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onds. This 7 bit sequence frames one character and then the machine remains at rest until a new character is generated or received which may be a letter, number, punctuation, or a control function like a space. The timing sequence of the code is shown in Figure 2 below.

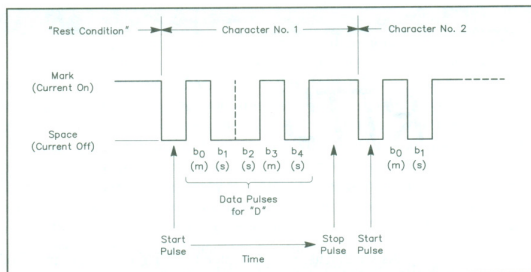


Figure 2, Timing of the Baudot Code used in RTTY

The two states of the binary sequence were known as Mark and Space and correspond to 1 and 0 today. Note the reference to current on or off. The old machines were current driven not voltage driven as today's logic. In many cases bipolar current was used to define the two logic states. The baudot code is shown in Figure 3 with the LSB on the right.

The 32 states of a 5 bit binary code are inadequate to encode the 26 letters of the alphabet, 10 numbers, 12 punctuation marks and 7 control functions so the code is used twice just like on an old typewriter using the shift function. Shift or shift lock is called LTRS & FIGS in baudot but they do the same thing. Note also there are no lower case letters just like in Morse. This code is written into the FCC Part 97 rules for amateur radio and for decades was the only code allowed for text transmission other than Morse.

The Baudot Code

Bits	LTRS	FIGS
00011	A	-
11001	B	?
01110	C	:
01001	D	\$
00001	E	3
01101	F	!
11010	G	&
10100	H	STOP
00110	I	8
01011	J	'
01111	K	(
10010	L)
11100	M	.
01100	N	,
11000	O	9
10110	P	0
10111	Q	1
01010	R	4
00101	S	BELL
10000	T	5
00111	U	7
11110	V	;
10011	W	2
11101	X	/
10101	Y	6
10001	Z	"
00000	n/a	n/a
01000	CR	CR
00010	LF	LF
00100	SP	SP
11111	LTRS	LTRS
11011	FIGS	FIGS

Figure 3, The Bardot Code

Modulation - The early days of ham RTTY used the TTY machine to directly key a CW transmitter. This worked but one state was noisy due to the transmitter being off causing decoding errors on weak signals. Frequency Shift Keying was introduced to solve this problem. A frequency shift of 850 Hz became standard using a reactance tube FM modulator on transmit and an audio frequency discriminator on receive to generate a bipolar signal to drive the TTY machine relays.

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Modern Day RTTY - The code hasn't changed in over 60 years and the modulation is still FSK however the shift has been lowered to 170 to 200 Hz to improve the S/N ratio. There are still no lower case letters or error correction. The big change is that the TTY machine and FSK modulator/demodulator are software in your PC. The I/O signals are at audio and are translated to and from RF with your SSB transceiver. The mode works well providing your received S/N is adequate. It is not a QRP mode. It is more tolerant of ionosphere distortion typical of the polar region than the Phase Shift Keying of the PSK-31 mode. Figure 4 below shows the bit error rate for FSK as a function of the C/N ratio for a perfect coherent (P_{ec}) demodulator and a practical non-coherent (P_{en}) FM discriminator.

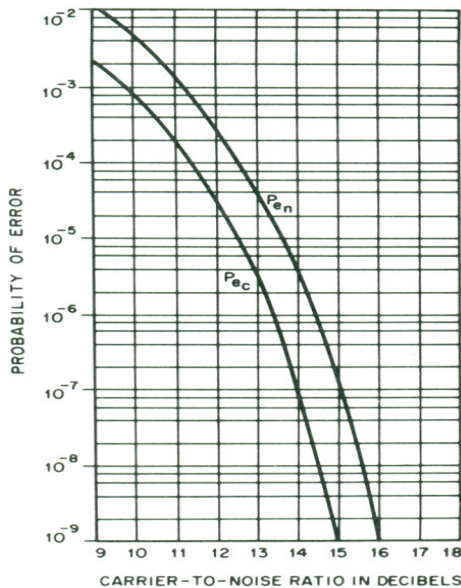


Figure 4, FSK Error Probability

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The Upcoming ARRL Field Day is a great chance for less experienced amateurs in the club to absorb the expertise of those who have been making contacts for decades in this annual rite of the end of Spring. Where else can you more easily learn to assemble a yagi, raise a mobile tower, make a distant contact, operate a logging program, set up an operating station, or simply get through on the repeater? And there are other clever skills like making a satellite contact, or sending an NTS message, or running a station on generator power that you can pick up with a little effort. The know-how to do all of these things and much more will be on display at Savich Field on June 27-29. One only needs to watch, ask, and participate. And SJRA needs your help, as sadly many who have supported SJRA Field Day for many decades are now watching from above.

All jobs at Field Day are open to those willing to help; below are listed just some of them:

- ◆ Get On The Air (GOTA) coach (9am Saturday - 2pm Sunday)
- ◆ NTS Message handling crew (Sunday morning)
- ◆ Satellite contact crew (see KC2TN for schedule)
- ◆ Alternate power crew (2-4pm Saturday)
- ◆ Antenna assembly crew (9am Friday - 2pm Saturday)
- ◆ Tower raising crew (9am Friday - 2pm Saturday)
- ◆ Caution tape crew (Friday evening)
- ◆ Signs crew (9am Friday - 2pm Saturday)

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- ◆ Station set-up crews (cables, generators, computers, links, radios) (9am Friday - 2pm Saturday)
- ◆ W1AW message copier (phone, CW, or RTTY - recording to transcription allowed, even a home)
- ◆ Hospitality (burgers and soda) staff (1-3pm Saturday)
- ◆ Attending Invited Elected official recruiter (start now)
- ◆ Youth (? 18) participation recruiter or participant (start now)
- ◆ Station operator or trainee (2pm Saturday - 2pm Sunday)
- ◆ Public information table host (1-4pm Saturday)
- ◆ Take-down crews (2-6pm Sunday)

Remember that none of these positions need be full time. If one feels intimidated during the rush of 2pm Saturday, he can still contribute handsomely at 2pm on Friday or 5am on Sunday when things are more casual. Or any other time (24 hours). Also remember that a 20 GOTA contacts (for those rarely on the air) count more because of bonuses than 20 contacts on 40m SSB. So if you come, you won't be shuttled off to making coffee. Instead you will be invited and helped into the GOTA station. And there will be a coach to help you.

A list of scheduled operators will be maintained on the SJRA website so that you can request a shift from a band captain and have it reserved. Many of those who sign up need breaks, so just showing up to provide a few breaks and fill-in contacts will be helpful as well. More information about non-operator activities is available from KV2R (kv2rrich at gmail dot com).

Monthly Puzzle

Don – WA2DUE, wa2due at arrl dot net

Last month we had the following to solve:

Convert the hexadecimal number 77C to the base ten and you will come up with a number of significance to our club.

Solution: To convert from any base system to the base 10 multiply each digit by its base to the power of P minus one, where P is the position of the digit. In this problem we multiply 7 times 16² plus 7 times 16 plus 12 the sum of these is 1916. 1916 was the year that our club was founded.

You have a rectangular plot of land whose diagonals equaled 360 meters and the angle formed by them is 65 degrees, what are the lengths of the sides? Approximately how many acres are contained within its boundaries?

Solution: If the angle formed by the diagonals is 65 degrees then the complementary angles are 180 - 65 = 115 degrees. Using the Law of Cosines $a^2 = b^2 + c^2 - 2bc\cos A$ where b and c equal 180 meters we get we get for the shorter sides 193.43 meters and for the longer sides 303.62 meters. Converting these lengths to feet and multiplying them we get 632150.95 square feet or a little over 14.5 acres.

Mary, KV2M, and Roy, WB2EOD, submitted solutions to these puzzles. Thank you both.

For this month let us consider the following:

A 200 foot communications tower has 4 guy wires from the top and 4 others from the 100 foot level. Each pair of guy

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Membership Memories

As membership person of the South Jersey Radio Association for over a decade, I have the most wonderful and interesting job of welcoming new members and welcoming back former members to our radio club. The youngest 'Welcome to SJRA' was Amber O'Brien - KD2BOO - age 7 and the most senior 'Welcome to SJRA' will be (during May 2014) Whitney Myers - KB2ZTL age 92. I even had the opportunity to welcome back one of SJRA's former presidents Joe Lameiras K2 Wonderful Joe Lameiras.

Just speaking to all the SJRA applicants is a radio adventure without the radio. Interesting, stimulating, exciting, fascinating, thrilling, 59(9), and many more adjectives just begin to describe those applicants. All are pleased and proud to become SJRA members and many are excited plus to become SJRAers.

Since 8th grade I wanted to be a commercial artist but alas, it was not in the stars. When I make those 'Welcome packages' I get the change to use some of my would be artistic talent. When the new members are called to come forth to receive their Welcome packages, badges, shake the president's hand, and receive a round of applause, you can see that sparkle in their eyes. I consider it an honor to announce their names, callsigns, license class, etc., and hand them their package and badge.

As many of you know, I am not on friendly terms with computers especially that #&*\$ Windows 8; therefore all membership records for my decade plus service are on that old fashioned thing called paper. To put it in more gentle words, those membership files are a 59(9) mess.

Another one of my jobs as membership person is to maintain both the Membership

Logs and Visitors Logs at each general meeting. Some of you are not signing in. Please do so. You are important. During the general membership meeting of 23 April 2014, I had a most unusual signature in the Visitors Log - none other than the famous (infamous) Dottie Dasher - N3FCC!

When I read April 2014 Harmonics stating that the FCC would reinstate the Morse Code test, I fell for it radio, antenna, and coax. Upon closer scrutiny, I realized that a great April Fool had happened. Some clues were the FCC Order 14-987af (maybe April Fool.) and the clincher - the FCC's director of examinations - Dottie Dasher.

What a humorous way to get someone's attention and the blood flowing (boiling). Since I am not an 'Extra Light', I would not have to worry about any code test but some of us, not to mention any names, were rather upset. We SJRAers have always been known for our humor. Humor can unite people and make what seems impossible and unbearable accomplishable. Humor can also sow the seeds of friendship, near and far. Humor and unity make us what we are - the best and greatest radio club in the world.

Thank you Dottie Dasher - N3FCC for one giant SJRA Belly Laugh.

73 to All, Mary, KV2M

Wanted

Alternate Editor for SJRA Harmonics.

This position does not require previous publication experience (only a computer with internet access) as **I will teach you all you need to know.**

Email: ted.w2tag at gmail dot com

K2AA QRZ?

On 11 April 2014 Ken - K2WB, President of SJRA, conducted his yearly demonstration of amateur radio to fifth grade students in one of the local schools. The kids were given an opportunity to experience first-hand the excitement of amateur radio. All of these students conducted themselves in a manner that would do amateur radio proud. I was fortunate to speak to several of these youngsters and future leaders. All spoke clearly and answered various questions that they were asked. The favorite school subjects of several of the students were science and math. They also participated in sports and were well informed about the sports in which they participated. Many of the students had pets consisting of dogs, cats, and birds. One youngster who spoke with me was the proud owner of a frog. The participants asked very interesting questions. They also learned the meaning of 73 and 88. I truly enjoyed listening to and in many cases talking with these kids. They were a breath of fresh air.

Thank you Ken for taking the time to bring the gift of amateur radio to school children. They are, after all the hope of our future. Maybe one day in the future some of them will be welcomed to SJRA as members of our great radio club.

Mary, KV2M

The SJRA would like to congratulate the following on their recent achievements:

April 9, 2014

Jordan P. Apgar
P.O. Box 43, 8 Elm Road
Colombia, NJ 07832
Earned his Tech

John A. Conroy, KA2KCA
1125 Miller Ave,

Gloucester, NJ 08030

Earned his Extra

Paul J. Gates, KD2AXH
513 Jefferson St.
Riverside, NJ 08075
Earned his General

Andrew B. Muenzenberger, KF2AQ
133 Colonial Ave.
Pitman, NJ 08071
Earned his Extra

Glen M. Oldak
1026 Irving St.
Phila, PA 19107
Earned his Tech

Robert H. Price
36 Swift Run Dr.
Sicklerville, NJ 08081
Earned his Tech

May 14, 2014

John F. Kreno, N3XKD
727 Fountain Ct.
Cinnaminson, NJ
Earned his General

Wayne Ewell
PO Box 949
Brown Mills, NJ 08015
Earned his Tech

Mitchell W. Aldrich
64 Burnt House Rd.
Indian Mills, NJ 08088
Earned his Tech

John Glowa, KC3CTU
1817 S. Alder St.
Phila, PA 19148
Earned his General

Harry Kingsmill
76 Mishemokwa Tr.
Medford Lakes, NJ 08055
Earned his Tech

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(Help For New Hams from page 1)

- ◆ Station Accessories—What to Buy? This chapter discusses a variety of station accessories including keys and keyers, microphones, antenna tuners, phone patches(!), and antenna switches.
- ◆ DX and Contest Operating. This chapter not only discusses operating procedures, but how certain equipment features will help the new ham work more DX and score better in contests.
- ◆ Logging, QSL Cards, and Record Keeping. This chapter discusses why it is important to keep logs and how to QSL.

Obtaining Accurate Information. This chapter is basically an ad for the ARRL, counseling the new ham to join the ARRL and buy ARRL books.

I am especially interested in hearing from new hams about these topics. What about amateur radio confused you at first? What information would have helped you have more fun with amateur radio? What do you know now that you wish you had known when you got started?



When he's not writing about amateur radio, Dan, KB6NU enjoys Elmering new hams and working CW on the HF bands. For more information about his operating activities and his "No-Nonsense" series of amateur radio license study guides, go to KB6NU.Com or e-mail cwgeek at kb6nu dot com.

List Your "For Sale" Ham Stuff in the SJRA Harmonics

Email Ted, W2TAG, with your listing, ted.w2tag at gmail dot com

(Ham Tech from page 6)

A 12.5 dB C/N will yield an error of 10-4 with a conventional discriminator. The text of this HAM TECH article contains about 950 words, about 4750 characters or 33.25 KBits. The error in transmitting this article by RTTY would yield 33,250 (10-4) or 3.3 errors with C/N = 12.5 dB, not great but acceptable performance.

Next Month - We will dig into the much newer PSK-31 mode that was designed to solve some of RTTY's problems.

(Monthly Puzzle from page 7)

wires (the top and middle) are fixed to the same anchor. All four anchors are the same distance to the foot of the tower. The guys from the top make an angle of 58 degrees with the ground. How many feet of guys are being used to support this tower?

A park occupies a triangular area that faces two streets that meet at an angle of 85 degrees. The sides facing the streets are each 60 feet in length. If you wanted to install flower plants every six inches around the perimeter, how many plants would you need?

Please submit solutions and/or comments to wa2due at arrl dot net.

(SJRA Congratulates from page 9)

William A. Tkacs, KD2FYC
 14 Curtis Lane
 Mount Holly, NJ 08060
 Earned his Extra

	Tech	General	Extra
YTD	61	19	11

SJRA Jackets, Shirts, Hats

Order NOW - Next order going in soon!



Spring Jacket is \$44 (S,M,L,XL), Fall Jacket is \$55 (S,M,L,XL),
Shirts are \$27 (S,M,L,XL), Hats are \$25 (one size fits all)
Name and Call Sign embroidery included....Larger sizes slightly more!
Email Joe, KC2TN, with orders or additional info: kc2tn at comcast dot net

Amateur Radio FCC License Testing

The SJRA sponsors *FREE* Amateur Radio FCC License testing on the second Wednesday of each month. The location is: 443 Commerce Lane, Suite 5, West Berlin, NJ 08091. Registration is at 7:00 PM and testing begins at 7:30PM. Walk-ins are accepted.

VE team members can be reached at VE@SJRA.org. A calendar and more information can be found on the SJRA web site.

May Meeting:**Fourth Wednesday, May 28, 2014**

The meeting commences promptly at 7:30PM in the first floor Meeting Room of the Gibson House on Main Street, Marlton, NJ 08053. Guests are always welcome.

Program For May:

I'm excited to let you know that the Storm Robotics Team will be our program for May 28th. Please make the effort in attending this wonderful program of kids and their love for electronics and making robots for competition...They are a great group of kids and love talking about what they do!! Enjoy the Program!!

May 2014 Health and Welfare:

We say Happy Birthday to the following this month: 12- John Foglebach, WY2J; 13- Kathy Edwards, KM2KME; 16- Mike Robison, KC2QIL; 24- Joe DeMarco, KC2SGV; 25- Mark Dodds, KC2VOW.

NOTE: It is with heavy heart I must say good bye to our club. I will carry great memories and wonderful friendships. We are moving to Dallas, TX. Don't be surprised if when I fly back to visit children and grand kids that I pop in for a meeting!! Thank you, for letting me serve our club by tending to the Programs and Health and Welfare. You will be missed....

Kathy Edwards, KM2KME

First Class Mail

South Jersey Radio Association
PO Box 1026
Haddonfield, NJ 08033

