April 2014 VOL XCVIII, ISSUE 10

HARMONICS

1916 South Jersey Radio Association 2014

GCARC Hamfest

We just firmed up the date for our 2014 Hamfest. It will be held Sunday, September 14 at the 4-H Fairgrounds in Mullica Hill, NJ. Cory, WA3UVV, is our hamfest contact person. Thanks. 73,

Tom, KE2ES
Hamfest Chairperson
www.w2mmd.org

FCC TO REINSTATE MORSE CODE TEST

"It was a big mistake eliminating the Morse Code test," admits FCC official

By Dan Romanchik, KB6NU

Washington, D.C. – April 1, 2014 - Today, the Federal Communications Commission (Commission or FCC) approved Report and Order 14-987af, which reinstates the Morse Code test for General Class and Amateur Extra Class licensees. "It was a big mistake eliminating the Morse Code test," admits Dotty Dasher, the FCC's director of examinations. "We now realize that being able to send and receive Morse Code is an essential skill for radio amateurs. As they say, it really does get through when other modes can't."

Not only will new applicants have to take the test, but General Class licensees who have never passed a code test will have one year to pass a 5-wpm code test. Similarly, Amateur Extra class licensees that never passed a code test will have one year to pass a 13-wpm test. Those amateurs that fail to pass the test will face revocation of their operating privileges. Materials for administering the examinations will be distributed to Volunteer Examiner Coordinators by the end of April, so that they can begin the testing on May 1, 2014.

"This isn't going to be one of those silly multiple-choice type tests," noted Dasher. "We're going to be sending five-character random code groups, just like we did in the old days. And, applicants will have to prove that they can send, too, using a poorly adjusted straight key."

Technician Class licensees will not be required to take a Morse Code test, nor will a test be required for new applicants. "We discussed it," said Dasher, "but decided that since most Techs can't even figure out how to program their HTs, requiring them to learn Morse Code seemed like cruel and unusual punishment."

When asked what other actions we might see from the FCC, Dasher hinted that in the future applicants taking the written exam may be required to draw circuit dia-

(Continued on page 10)

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 it's 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 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

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

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Nets: John Fogleboch, WY2J
Publicity: Debbie Pullaro, W9QWN
Picnic:: Debbie Pullaro, W9QWN
Ways & Means: Ray Golley, N3RG
Property: Jon Mac Millan, W2MC

Harmonics Staff:

Publisher/Editor: Ted Groke, W2TAG
Alternate Editor: **Vacant so please volunteer. I will teach you all you need to know. Ted, W2TAG**
Circulation: Mary VonLintig, KV2M; Jim Vecchiola, KR2T

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, May 12, 2014. Email:
ted.w2tag *at* gmail *dot* 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

Minutes of Membership Meeting 3/26/14

The meeting opened at 1935 by Jon, W2MC, at the Gibson House in Marlton, NJ. All Officers and Directors were present except W9QWN, K2WB, and N3AVT. Jon requested identifications around for those visitors present.

Minutes of the February meeting were approved as printed in Harmonics. Motion by N2HQL/WB2EOD. The Treasurer had no report, numbers were left home when loading items for tonight's program. He did state that Joe, KC2TN would collect dues .

New Members: by Mary, KV2M; Chris Pycik, KD2FHA (Badge only); Scott Pycik, KD2EQP (Badge only); Brian Gross KD2FJX; Ray, KD2FMX; Len, KD2FMV. Mary reported she still has two t-shirts available at $10.00 each. As historian, Mary passed around a picture from FD 1952, held in Clementon.

Kathy, KM2KME, made the Health & Welfare report: Abby (W2MC's XYL) is home from the hospital and rehab. Kathy reports all birthday cards were mailed.

Programs, also by Kathy, KM2KME; tonight is building your own antenna by Ray, N3RG. April and May are still not solid as The Storm Robotics Team appearance depends on competition schedule.

Dennis, AC2FO, reports no correspondence for the month.

VE testing report given by Lou, N2HQL- March session had six candidates, all passed.

Nets, by John, WY2J: Participation has been good, had 17 on 2M. The repeater operating well all month. He reported that Roy, WB2EOD took one of the Net Control spots on 10 Meters, he still needs at least one on 2 M. See him at break if interested.

DX is! By Jack, N2VW: W1AW/0 or/1 currently on, other call areas to be on later. Also W100AW and W1HQ on the air. T6DD, Afghanistan until 15 September (Subject to orders change); VK9M, Mellish Reef (Rare); HC1GVT, Ecuador; 6W, Senegal scheduled to start 21 October. WPX contest SSB 29-30 March so ***Go Get It***!

Repeater by KC2TN: One spate of noise this month. Pine Hill machine will need to be moved in the future as the fire house plans to expand the building right over the bunker. Club stuff still taking orders, we are out of blue hats but tan hats are still available.

Web, by IRA, W2IRA; mostly moved to new servers. Field day is 28 and 29 June. The proposed dog park should not affect us. Meeting about the dog park will be held April 15th.

No Old business,

New Business: Al, W2EQ is looking for a manual covering the 310A scope he bought at last months meeting. Art Arnold, N2CPR stressed need for operators for the MS150. WB2EOD asked if there could be more sales throughout the year to shorten the run time of each. It will be discussed by the board. We recessed at 2020 for refreshments prior to the program.

(Continued on page 6)

HAM TECH

Vol 5 No. 4 by John - WY2J

wy2j *at* arrl *dot* net

Digital Signal Processing

Part 4 of 4: Weighting and Matched Filters

Introduction – Last month we took an in-depth look at the DFT and FFT algorithms for building multiple digital filters based on the mathematical Fourier transform. The modern Fast Fourier Transform (FFT) is a very efficient method of building digital filters as measured by the number of computations required and thus the amount of required hardware. One of the reasons that the FFT and small DFT are computationally efficient is that the number of time domain signal samples is an absolute theoretical minimum just satisfying the time aperture frequency resolution criteria described in part 1 of this series. Thus an 8 filter FFT or DFT requires only 8 time samples with the FFT requiring 12 complex multiplies and the less efficient DFT needing 82 or 64 complex multiplies. This relatively short time aperture does expose a theoretical fault of the time limited or discrete Fourier transform, signal leakage from one filter to adjacent ones known as sidelobes. To avoid this issue the Fourier transform requires integration over an infinite time interval, clearly impractical for anyone except mathematicians. As I pointed out last month this problem can be significant if the time aperture is rectangular meaning that the amplitude of each sample is the same. I also alluded to a practical fix known as weighting or windowing. We will start by looking at a number of weighting functions and their performance.

Common Weighting Functions – Figure 1 shows the amplitude vs time shape of five weighting functions and the frequency structure of the filter output for a 64 filter FFT. Only half of the mainlobe and half of the sidelobes are shown because the response is symmetrical about the mainlobe center frequency. Included in Figure 1 is the unweighted or Rectangular aperture case with its sin x/x sidelobe structure in the frequency response chart. The other charts are for the Barlett aka Triangular, Blackman, Hamming and Hanning weighting functions.

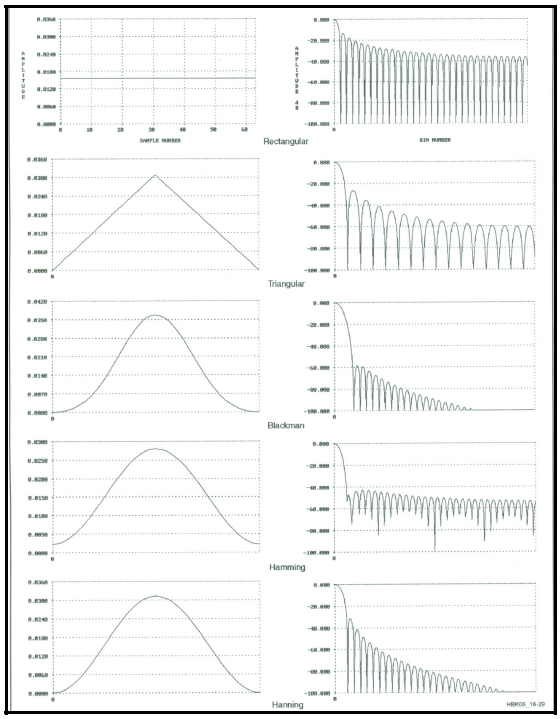

Figure 1 – Five Weighting Functions with Filter Frequency Responses.

With the exception of the Bartlett weighting function the balance shown are based on cosine or cosine squared functions

(Continued on page 5)

(Ham Tech** from page 4)

with or without pedestals. For the equations defining the various weighting filters see the 2013 edition of the ARRL Handbook pg. 15.15. Note that the mainlobe response spreads with weighting relative to the unweighted case. This is due to the fact that weighting throws away signal energy. It also introduces S/N loss which is in the 1 to 2+ dB region being greatest with the heaver Blackman function. This weighting function also gives the lowest sidelobes, -60 dB peak with rapid fall off of the remaining sidelobes but also with the greatest mainlobe spreading. Note that when a pedestal is involved like the 8% one of the Hamming function the far out sidelobes are elevated relative to the non-pedestal cases like Blackman and Hanning. It's all a tradeoff of what is important. For Ham Radio the author would choose Blackman weighting but made extensive use of Hamming, during his Radar Signal Processing design years at RCA, GE and Lockheed Martin, due to its good enough -43 dB peak sidelobes and acceptable 1.3 dB S/N loss.

The Matched Filter - No where in Ham Radio literature will you come across the term matched filter because most ham modes were designed in the analog days and you can't build a practical analog matched filter. But you can with digital technology especially the FFT implementation of a convolution algorithm. All ham receivers implement mismatched filters that introduce S/N loss. As an example I will examine the oldest ham mode Morse Keyed CW which is just pulse modulation as used in many radars. Figure 2 shows the S/N loss for rectangular pulses just like dots and dashes with four filter types including the matched case as a function of the product of the filter bandwidth and the pulse width.

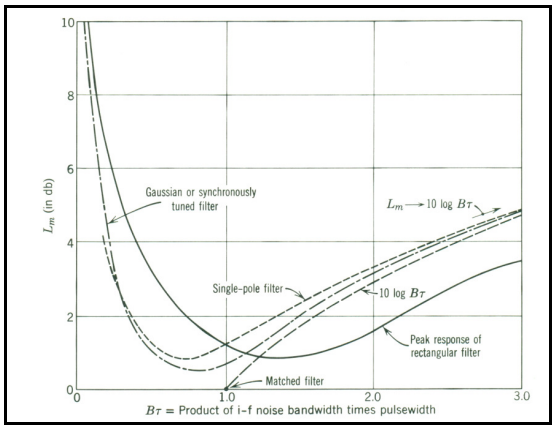

Figure 2—S/N Losses for 4 filter types vs βτ

For good CW, the pulse length of a dash is three times that of a dot and since we don't change filter bandwidth between them the best we can do is design a filter that straddles equal loss points. The rectangular filter, solid curve, is a close approximation to modern CW filters. Pulse widths are a function of speed so let's assume we can set up a βτ of about 0.75 for a dot and it will be 2.25 for the dash. The solid curve on Figure 2 shows about 2 dB loss for both. Not bad you say but it's about equal to 37 percent of the transmitter power. If we could use two matched filters, one for the dot and one for the dash we could eliminate the loss. Not very practical because we can't control the sending stations speed and dot width and in many cases even the 3:1 ratio of dashes to dots. But when you take away this freedom from the operator like in the JT-65 HF mode you can do this type of advanced filtering. It takes a lot of attention to loss reduction to build a mode that can copy error free on a signal, which is 26 dB below noise in an 2.5 KHz SSB signal bandwidth like JT-65 HF.

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(***Ham Tech*** *from page 5*)

So how do you build a matched filter? You convolve the received signal with a delayed replica of the transmitted signal. And how do you build a convolver? Convolution in the time domain is equal to multiplication in the frequency domain. So you run your transmitted signal through an FFT and store its complex conjugate in memory. You run the received signal through an FFT, multiply with the stored replica and IFFT back to the time domain. Will it work with ham modes? Sure as long as you know or can control the transmitted signal characteristic. Your author build an FFT/IFFT convolver on a single 5X7 inch digital module that could perform up to 16,000 point convolutions with an FFT complex butterfly rate of 20 million/second in the mid 1980's at RCA. We had to design our own IC chips then but today you could buy them off the shelf.

So we come to the end of this four part series on Digital Signal Processing. Many of you may wonder what use it is to you. It's knowledge and hopefully an understanding of some of the things that are going on inside the DSP of your rig and inside the software of your digital modes that run on a computer sound card.

Next Month: - I will start a four part series on popular Digital Sound Card Modes including RTTY, PSK31 and all its flavors, JT-65 HF and one more if space allows. It will round out four years of HAM TECH so start thinking about what you would like to see in year five and drop me an e-mail at wy2j *at* arrl *dot* net with your ideas.

(***Meeting Minutes*** *from page 3*)

Board Meeting 4/2/2014

Meeting opened at 1930, at the Gibson House. All were present except W2IRA and W9QWN. Ken, K2WB, checked in by phone but went back to work shortly thereafter. Jon, W2MC, chaired the meeting, opening on schedule at 1930.

Minutes of the March meeting were approved as printed in Harmonics. Motion, N2HQL/KM2KME.

Treasurer's report by Ray, N3RG, 86 paid members so far. He presented a list of non-renewing members for review and possible contact by board members. There is a bill for $389.47 due for insurance. There was a motion to accept his report and to include paying the insurance when due. Motion by N2HQL/KR2T the motion passed. Ray then made a motion to waive dues for N2EAC, Ed Cienki for his services as legal rep for the club, seconded by AC2FO, motion passed.

New members by Mary, KV2M, ; James Stanmore, KD2FYD; Robert Price, n/c. Both were accepted, contingent on receipt of funds by Mary, KV2M. Motion AC2FO/KM2KME. As historian, Mary showed a photo from 1949/1950 Field Day.

Programs- no word yet from Storm Robotics so scheduled is Skip, N2EI, with a subject of CW. Health & Welfare; Abby (W2MC XYL) is improving; WA2FRA became s/k; Grandson of KM2KME got a concussion due to a baseball in the head. W2BE has been out of commission for two months due to surgery.

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Program That – Part 3

The Years 1954 and 1955

Time waits for no man (or woman). In just one month History has taken us from the years of 1952 and 1953 all the way to the years of 1954 and 1955. We are now half way through the twentieth century with those pathfinders who paved our way into the twenty first century.

1954

January

'Working DX on the Two Meter Band by R. E. Thomas, W2UK, and 'Design on Low Noise Two Meter Converters' by Carl E. Scheideler, W2AZL.

February

Dan Rosenthal from Barker and Williamson presents a preview of the new all-bank transmitter that they will be releasing for sale early this year.

March

Gil Crossley, W3YA, will discuss current topics (prior to the ARRL Board of Directors meeting).

April

R F shielding and filtering presented by Sam Burruano.

June

Lloyd H. Manamon, W2VQR, chairman of the Amateur Radio Division, Communication's Advisory Committee and the State Radio Officer for RACES is the speaker this evening.

July

Motion pictures of Field Day and other SJRA activities.

August

White Elephant Sale (That must be some White Elephant. He is still alive and kicking 60 years later.)

October

R. C. McClure, First Lieutenant, Signal Corps representative of the Military Affiliate Radio System will discuss the MARS system. He is the First Army MARS Director.

1955

January

'Single Sideband Techniques' presented by Jack Brown – W3SHY of the Barker and Williamson Company.

February

Walter Guzewicz, President of the Stainless, Inc. of North Wales, PA speaks on the subject of radio towers; design, stress, and loading.

March

DX Operating and Awards presented by Sam Fraim, W3AXT, publisher of Dxerama.

April

Paul Schreiber, W2UUH, speaks about TV1 Elimination by use of Metex Shielding Products.

May

Wayne Green, W2NSD, editor of CQ Magazine gives a talk about Amateur Radio as used by the Editor of CQ. Current manufactured gear will be demonstrated.

July

'First 30 Years of Amateur Radio' Slides and sound lecture by the ARRL that has been compiled by W2ICE

October

'Audio Applications of Transistors' presented by A. I. Aronson

November

Robert W. Pearson, an RCA Engineer speaks on 'Effects of Atomic Explosions on Commercial Electronic Equipment'

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Not a State Possessions

Part 6 – Wake Islands

The Wake Islands are actually an atoll made up of three islands: Wake Islet, *the largest,* Peale Islet; Wilkes Islet; and a reef surrounding a lagoon with a coastline of 12 miles. Their area is about eleven times the size of the mall in Washington DC. They are located just north of the Marshall Islands and west of the International Date Line. Access to the islands is restricted and administrated by the Office of Insular Affairs US Department of Interior. All activities on the island are managed by the US Air Force.

On 20 October 1565 Alvaro de Mendana, a Spanish explorer discovered a low barren island and named it San Francisco. The island was eventually named for the British Captain William Wake who visited the island in 1796. Brigadier General Francis Greene stopped at Wake Island in 1898 and raised the United States flag. On 17 January 1899 Commander Taussig of the US Navy landed on Wake Island and took possession for the US as a planned telegraphic cable station. A Naval base was constructed in 1940 – 1941. On 8 December 1941, Wake Island Time, Pearl Harbor in Hawaii was attacked. Remember it was 7 December in Hawaii, which is on the other side of the International Date Line. The Japanese also attacked Wake Island and held it until the end of WWII. On 4 September 1945, the Japanese garrison surrendered to the United States Marines. The formal surrender of the Japanese garrison on Wake Island took place on 7 September 1945. On 15 October 1950 President Truman and General Douglas MacArthur met on Wake Island concerning the Korean War. Wake Island was chosen because it was closer to Korea.

Here are some tidbits about the United States' Possession Wake Island.

Wake Islands' time zone is UTC plus 12. That is one day ahead of the 50 United States.

In 1952 the Wake Island Airfield was activated. It is a military airport known for the Battle of Midway. The airfield is owned by the US Air Force, but can be used for emergency landings of transpacific flights.

There are no ports or harbors, only two offshore anchorages for large ships.

The lowest point is 0 feet and the highest point is Ducks Point – 20 feet.

The"98 Rock" is a memorial for the United States POWs.

The shortest day is 21 December with 10:58 hours of sunlight. The longest day is 21 June with 13:17 hours of sunlight.

The Wake Island Rail, Gallirallus Wakensis, a flightless bird, was found nowhere else in the world until it became extinct in 1945.

Wake Island is IOTA OC-053. The callsigns for Wake Island are AH9, KH9, NH9, and WH9. Have any of you SJRAers worked Wake Island?

73 from the State of New Jersey, the QTH of SJRA – the oldest continually operating amateur radio club in North America, and the best.

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

Monthly Puzzle

Don—WA2DUE, wa2due *at* arrl *dot* net

Last months puzzles were:

Three resistors are tied end to end forming a triangle. If all three have each the same value and an Ohmeter measures 100 Ohms across any one of them can you determine the value of these resistors?

Solution: Look at this circuit being a single resistor in parallel with two in series. Since the measured resistance across one of them is 100 Ohms we can form the equation 1/100 = 1/R+1/2R and if we multiply both sides by 2R we get the equation R/50 = 2+1. Therefore R (each resistor) equals 150 Ohms.

The California gold rush occurred in 1849. How many "leap" years have transpired since then?

Solution: A "leap year" is defined as any year evenly divisible by 4 but not by 100. However, any year divisible by 400 is deemed a "leap year". I solved this puzzle by subtracting 1849 from 2014 and divided the subtrahend (which is 165) by four and got a dividend of 41.25 but I have to exclude the year 1900 and therefore the correct answer is 40.

Dennis, AC2FO; Mary, KV2M, and Matt, W2MAT submitted solutions to these puzzles. Thank you all.

For this month let us work on these puzzles:

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

You have a rectangular plot of land whose diagonals equal 360 meters and the

(Continued on page 10)

DXCC COUNTRY/ENTITY REPORT

According to the AR-Cluster Network for the week of Sunday, 6th-April, through Sunday, 13th-April there were 230 countries active. Countries available: 3A, 3B8, 3B9, 3D2, 3V, 3W, 4J, 4L, 4O, 4S, 4U1I, 4X, 5A, 5B, 5H, 5N, 5R, 5T, 5W, 5Z, 6W, 6Y, 7P, 7X, 8P, 8R, 9A, 9H, 9J, 9K, 9L, 9M2, 9M6, 9N, 9Q, 9V, 9Y, A2, A3, A4, A5, A6, A7, A9, AP, BV, BY, C3, C5, C6, C9, CE, CE0Y, CE9, CM, CN, CP, CT, CT3, CU, CX, D2, D4, DL, DU, E5/s, E7, EA, EA6, EA8, EA9, EI, EK, EL, EP, ER, ES, ET, EU, EX, EY, EZ, F, FG, FK, FM, FO, FP, FR, FW, FY, G, GD, GI, GJ, GM, GU, GW, HA, HB, HB0, HC, HC8, HH, HI, HK, HK0/a, HL, HP, HR, HS, HZ, I, IS, J2, J3, J5, J6, J7, JA, JD/o, JT, JW, JY, K, KG4, KH0, KH2, KH6, KH8, KL, KP2, KP4, LA, LU, LX, LY, LZ, OA, OD, OE, OH, OH0, OK, OM, ON, OX, OY, OZ, P2, P4, PA, PJ2, PJ4, PJ5, PJ7, PY, PZ, S2, S5, SM, SP, ST, SU, SV, SV/a, SV5, SV9, T32, T5, T7, T8, TA, TF, TG, TI, TJ, TK, TR, TT, TY, TZ, UA, UA2, UA9, UK, UN, UR, V3, V4, V5, V7, V8, VE, VK, VK9N, VP2E, VP2V, VP5, VP6, VP8, VP8/h, VP9, VR, VU, XE, XU, XX9, YA, YB, YI, YJ, YL, YN, YO, YS, YU, YV, Z3, ZA, ZB, ZC4, ZD7, ZD8, ZD9, ZF, ZL, ZP, ZS

* Please Note: The report "could" contain "Pirate/SLIM" operations or more likely a "Busted Callsign". As always, you never know - "Work First Worry Later".

President's Message

Ken – K2WB

March Madness is now over and the Spring Weather brings flowers, rain and thunderstorms. Remember to keep all of your antennas and gear lightening safe.

And finally Field Day will be here before we know it. The club needs your help to succeed. Contact a band captain or myself if you want to help and be part of the success of the SJRA!!

***(FCC To Reinstate Morse Code Test** from page 1)*

grams, such as Colpitts oscillators and diode ring mixers, once again. "We're beginning to think that if an applicant passes an amateur radio license exam it should mean that he or she actually knows something," she said.

For further information, contact James X. Shorts, Assistant Liaison to the Deputy Chief of Public Relations for the FCC at (202) 555-1212 or jim.shorts@fcc.gov. For more news and information about the FCC, please visit www.fcc.gov.

• •

Dan, KB6NU, is the author of the "No-Nonsense" amateur radio study guides and a leading amateur radio blogger. You can find his study guides by going to his blog at www.kb6nu.com. You can contact Dan by e-mail at cwgeek@kb6nu.com, or, after you pass the test, by CW. Look for him at the bottom of just about any HF band.

***(Program That, Part 2** from page 7)*

As time goes by the South Jersey Radio Association gets older and older and better and better.

73 to All and I am History,
Mary, KV2M

***(Monthly Puzzle** from page 9)*

angle formed by them is 65 degrees, what are the lengths of the sides? Approximately how many acres are contained within its boundaries?

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

(Meeting Minutes from page 6)

No correspondence handled, reported AC2FO. VE session had 6 take and pass last month.

A discussion of additional sales was held but no decision regarding additional sales was made; however, it was pointed out that Harmonics is available for personal ads to sell equipment as well as the member reflector.

There was some discussion regarding the QSL mgr., who hasn't been heard from for some time.

100th anniversary fund is $279.03.

Old Harmonics stocks to the VE team for distribution to potential members.

The last item was a need for a volunteer to be assistant editor of Harmonics.

By Lou, N2HQL

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

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

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

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

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.

April Meeting:

Fourth Wednesday
April 23, 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 April:

Our April program will be presented by: Skip Arey, N2EI, who will give a great presentation on CW-Continuous Wave Morse Code Transmission.

April 2014 Health and Welfare:

We are saddened to announce the passing of Robert Rutherford, WA4FRA.

Abbie McMillan is home and improving a little more each day! Go Abbie!!

We say Happy Birthday to the following this month: 14 – Michael Temme-Soifer, KC2MTM; 16 – Betty Fletcher, KB2WDG; 21 – Miguel Ramirez, KC2HMG.

Kathy Edwards, KM2KME

First Class Mail

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