



# HARMONICS

1916

South Jersey Radio Association

2013



## **The South Jersey Radio Association Continues To Leap Into: The Past, Present, And Future! Happy Unleap Year – Part 7**

Time certainly does fly when you are having a good time and with the South Jersey Radio Association a good time can be had by all. It seems like just yesterday when the year was 1916. Before you know it, the magic year 2016 will be upon us. Bring it on.

### 1988

Our leaders for 1988 were:

President – Ed Ramming, AB2Y  
 Vice President – Dan Kernan, NX2C  
 Treasurer – Edgar Macy, KA2KFO  
 Rec. Sec. – Tom Bitzer, N2GUW  
 Cor. Sec. – Walt Schmidt, W2EA

### Directors

Al Sherman, WB2O EZ  
 Russ Cramer, WA2CJF  
 John Frombach, KA3LCF  
 Frances Widmann, WA2NBE  
 Jean Priestley, KA2YKN  
 Joe Lameiras, WA2WJL  
 Len Sobolowski, KC2XX

Meetings were held at the Pennsauken Senior High School.

January VHF score was 107,738.

We bagged 1,257,408 points in the ARRL DX Contest. CW scored 560,889 with

Frank, WA2VYA, being the point leader and Phone scored 696,519 with Miles Brown (Brownie), WA2PAU, the point leader there.

Arnold, N2EZ, and Walt, W2EA, were presented with ARRL 50 year membership plaques.

Sunspot cycle number 22 was on its way up.

There were over 200 members in our club.

Restoring Old Radios was the program for April. Mario, N2AK, would have loved that.

Jean Priestley, KA2YKN, became the Emergency Coordinator for Camden County.

On Wednesday 28 May 1988 the repeater 'died.' It needed to have its controller reset.

Our Field Day Chairman starred John Frombach. The site was the front area of the Pennsauken Senior High School. On Saturday afternoon at about noon the bands were affected by a solar flare and went dead, but when the actual contest started they really opened up. Good timing Old Sol. We were 11A with 4530 QSOs and 13,082 points. On Field Day Eve 24 June 1988 the future KV2R said 'I do' to the future KV2M and the future KV2M responded 'I do' to the future KV2R. How romantic.

*(Continued on page 4)*

## 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 K2AA DX Cluster (145.770) located in Mt. Laurel, NJ. The repeater and DX Cluster are open for use without restriction to all licensed amateur operators. The DX Cluster is also accessible on line (see [www.sjra.org](http://www.sjra.org) for information).

There are currently over 150 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](http://www.sjra.org)  
 Mark O'Brien, K2AX, is the SJRA/ARRL VUCC card checker  
 Joe Fisher, KC2TN, is the SJRA/ARRL WAS card checker

### Officers

**President:** Ken Botterbrodt, K2WB  
**Vice Pres.:** Jon Mac Millan, W2MC  
**Treasurer:** Ray Golley, N3RG  
**Rec. Sec:** Lou Priestley, N2HQL  
**Cor. Sec:** Ted Groke, W2TAG

### Directors:

Kathy Edwards, KM2KME  
 Rich VonLintig, KV2R  
 Debbie Pullaro, W9QWN  
 Ira Weinstein, W2IRA  
 Mary VonLintig, KV2M  
 Jim Vecchiola, KR2T  
 Al Witner, N3AVT

### Committees:

**Historian:** Mary VonLintig, KV2M  
**Membership:** Mary VonLintig, KV2M  
**Field Day:** Ken Botterbrodt, K2WB  
**Contests:** Jon Mac Millan, W2MC  
**Repeater:** Joe Fisher, KC2TN  
**Programs:** Kathy Edwards, KM2KME  
**H&W:** Kathy Edwards, KM2KME  
**Awards:** Lou Priestley, N2HQL  
**Hospitality:** Jean Priestley, KA2YKN  
**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  
 or Don Beaulieu, WA2DUE  
**Circulation:** Mary VonLintig, KV2M;  
 Jim Vecchiola, KR2T

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 ★ **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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### 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 6, 2013. Email: [ted.w2tag at gmail dot com](mailto: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

### Minutes of General Meeting 3/27/2013

The meeting was opened at 1935 by Jon, W2MC, at the Gibson in Marlton, NJ. All officers were present except: Ted, W2TAG, and Ken, K2WB. The question of the night was "what is your maximum power output capability."

Minutes of the February meeting were approved as printed, motion by N2HQL/W2MAT.

Ray, N3RG, made the treasurers report. Accepted on motion by KC2TN/KA2MSM.

New members by Mary, KV2M,- only one, not present.

Historian- Mary, KV2M, presented an example of old stationery with the seal of the president of SJRA; no one present knew there was a seal for the president.

Programs- by Kathy, KM2KME,- April- Hilltop to hilltop- passing information via semaphore; May Storm Robotics team; June- Field day wrap-up.

Corresponding Secretary- no report.

VE TESTING- Setup for April 10th start.

Nets by WY2J- 2 meters, 8-10 check-ins; 10 Meters, 4-6 checkins.

Contests CQ wpx phone, Spring Sprints.

DX from the 425 DX news by N2VW- Singapore & Malaysia, 1-12 April; 9v1/GORCI and 9M2/GORCI, Azores, 26 March-3 April; CT\*/PA4N, Guam 29 Mar-2 Apr; NH2KY, Greece 25-29 March; SV8/

DJ4EL, Cocos-Keeling IS., 30 Mar-13 Apr; VK9CZ, Laos ,30 Mar-3 Apr.

Club Stuff- Joe, KC2TN,- Some Black hats available- Still Taking orders for other stuff. Repeater seems ok, still need antenna checked.

Tonights program-Web. Hospitality - it is ready; Publicity- space nothing; Picnic- will be held at field day.

Report of nominating committee: Don WA2DUE

President, Ken K2 WB

Vice Pres., Jon W2MC

Treas. Ray, N3RG

Rec. Sec., Lou, N2HQL

Cor. Sec. , Dennis AC2FO

Directors: Jim, KR 2T; Mary, KV2M; Richard, KV2R; Al, N3AVT; Deb., W9QWN; Kathy, KM2 KME; Ira, W2IRA

Jon, W2MC thanked the committee and excused them. Nominations from the floor: Roy WB2EOD by Mary KV2M, he accepted.

Old business: none.

New business; March QST stated there may be an allotment at 472K hertz. There is a donation jar for the 100th anniversary celebration.

Recessed for refreshments at 2010.

### Minutes of Board Meeting 4/3/2013

The meeting was opened by Jon, W2MC at 1930. All were present except, Ken, K2WB; Deb, W9QWN; and Ted, W2TAG.

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(SJRA Leaps from page 1)

During November Alan Cronin EI8EM from Ireland was approved as a member of SJRA. He is our lucky shamrock and our four leaf clover.

### 1992

Our leaders for 1992 were:

President – Ed Ramming, AB2Y

Vice President – Al Sherman, KE2VX

Treasurer – Terry Murphy, N2JSB

Rec. Sec. – Frances Widmann WA2NBE

Cor. Sec. – Diane Nafis, N2LCQ

Directors:

Joe Duffin, W2ORA

Don Nafis, N2LCR

Lucy Buschkuhler, N2LCO

Jean Priestley, KA2YKN

Ed Farmer, K2OSV

Don Beaulieu, WA2DUE

Bruce Eichmann, KE2OP (now W2BE)

On 31 January 1992 Gordon Kressel – W2BQ became a Silent Key at the age of 94. He was born in England and came to the United States at an early age and lived in Collingswood for most of his life. Mr. Kressel was licensed in 1915 with the call sign 3WU. He was one of the Founding Fathers of SJRA and a dedicated and faithful member of our club for 75 years. With his death, Bill Pyle – W3WR was the only living charter member of our radio club. Gordon Kressel – W2BQ your legacy will never be forgotten. KV2R and I (KV2M) received the award bearing your name in year 2005. This award is proudly displayed in our home and will follow us wherever we go. Your feet must be a super-size because no one can ever fill your shoes.

Our VHF Contest score the was 73,755.

Our Field Day home this year was the Repeater site in Medford. Our Field Day chairman was Don, WA2DUE, and Joe,

W2ORA, co-chairman. The Field Day Chairman was speaking like a Marine when he stated that he is looking for a few good people – actually for a lot of people to help with Field Day. I know that our permanent Field Chairman is always looking for a lot of good people to help with Field Day. Come on troops. Report for duty. We entered in category 8A and placed third in that category with 2,952 QSOs and 9,060 points. Walt, W2EA, just two weeks after operating in the June VHF contest from High Knob came down from the mountain and ran right to the 20 meter CW station. Mike, WA2ABF, publicity director arranged for six newspaper writers/photographers to visit the Field Day site. Articles with photos appeared in the Courier Post and Burlington County Times. Two SJRAers John, K2YY, and his son Michael, KB2EUC, operated Field Day from the historic Marconi site in South Wellfleet MA.

Southern New Jersey ARRL Section Manager and SJRA Director Bruce Eichmann, KE2OP (now W2BE), was presented with a certificate of appreciation from the ARRL president George Wilson III, W4OYI. Bruce was recognized for his 'record of success in amending the New Jersey Scanner Law.'

Mark O'Brien, N2PKP (now K2AX), became a member of SJRA. This was the start of the O'Brien 'family.'

In December Walt Schmidt, W2EA, retired as editor of Harmonics. He had put in his time since 1975. That is 17 years. Hang in there Ted, W2TAG, and you can beat that.

I never had the pleasure of meeting many of these people who came alive for me through our History files, but just meeting them on paper is truly an honor. "I am a part

*(Continued on page 10)*

## HAM TECH

Vol 4 No. 4 by John - WY2J

wy2j at arrl dot net

### Oscillators And Frequency Synthesizers

#### Part 3 of 3 – Direct Digital Synthesizer (DDS)

Introduction – This issue of HAM TECH explores the Direct Digital Synthesizer or DDS, an almost magical piece of 21st century semiconductor technology that allows building a high performance synthesizer out of 1 crystal, 3 chips, 1 LCD display, a handful of capacitors and inductors (for a low pass filter) and a rotary shaft encoder tuning switch. And it can switch frequency so fast that it can serve as the receiver local oscillator and the transmitter drive source, switching at the keying rate.

I recently bought a TenTec model R4020 CW QRP rig that uses the DDS for its frequency control. It is in a 3.5 x 5.5 x 1.5 inch (29 cu inch or 0.02 cu ft) package including 8 AA batteries for power. It weighs about 1 pound less batteries and paddles. It cost me less than \$200 new. Add a set of mini-paddles, ear bud phones and a 2 band resonant dipole antenna and you have a great 20 & 40 meter portable 5 watt CW station that you can shove in the pockets of your cargo shorts for under \$350. This level of performance including size and weight could not be achieved without its internal 3 chip DDS. DDS Theory of Operation – To create an electrical sinusoidal signal, the output of an oscillator, from a digital word that encodes frequency requires a three step process. First the frequency must be converted to a continuous phase rotation and this is done by mathematical integration or in the world of digital circuits we add and accumulate with roll over every 360 degrees.



The TenTec R4020 with Palm Mini-Paddles and Sony Headphones

Think of it as a wheel with a reference mark on it that rotates at the rate of the frequency input. If we increase the frequency the wheel rotates faster. But we want a sinusoidal signal so we pass the digital words outputted from the accumulator into a math table of sines or cosines, either will work since they differ only by a phase shift constant. We now have our signal but in digital format so we pass it thru a 10 to 14 bit Digital to Analog converter (D/A) and then a low pass filter and we have our desired RF oscillator signal. Its frequency will follow the value of the input frequency word almost instantly so switching back and forth between the transmitter frequency and the 1st local oscillator at a high speed keying rate, QSK, is entirely practical. Figure 1 shows the major functions of a DDS like the Analog Devices AD9850 with a 14 bit D/A that will clock up to a 400 MHz rate. This is not the DDS used in the Ten-Tec rig.

All of the functions shown in Figure 1 except the 100 MHz crystal and the low pass filter are built into two tiny surface mount silicon chips. A third chip, a programmable micro-controller is also required to accept

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(Ham Tech from page 5)

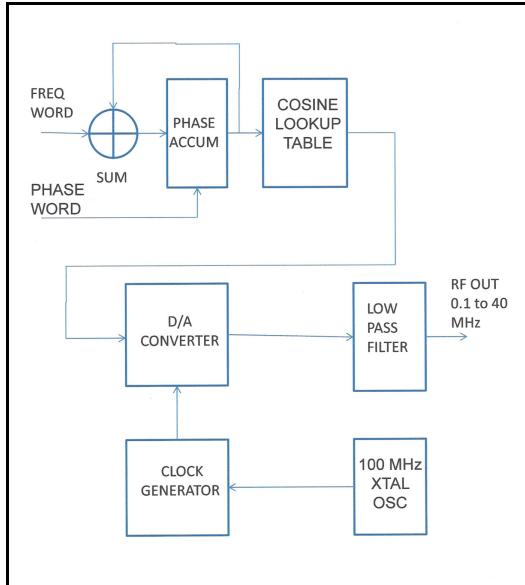


Figure 1, Block Diagram of a 0.1 to 40 MHz DDS.

frequency tuning input from a shaft encoder and drive a frequency and mode display. Several small power conditioning chips are also required since the logic core of the AD9850 DDS and interfaces requires 1.8, 3.3 and 5 volts. The AD9835 used in the Ten-Tec rig requires a smaller number of voltages and is clocked at 50 MHz yielding a signal output of 20 MHz maximum.

There are some things to know about DDS synthesizers. First the output frequency has a very small error associated with it that varies with the dialed in frequency. This is due to the fact that the dialed in frequency is in floating point format and the DDS works with fixed point arithmetic. The error is very small, typically less than 0.05 hertz peak to peak with the 32 bit arithmetic of the AD9850 DDS operating at 200 MHz clock frequency or less and is not a problem in most ham applications.

Second the performance of a DDS is sensitive to the type of number system employed. It cannot use any system that has two digital values for zero such as sign magnitude. This is of no concern to hams using a commercial DDS, only if you design your own, which is unlikely.

Third the DDS has low level spurious signals present that depend on the accuracy and number of encoding bits in the D/A converter. The 14 bit D/A in the AD9850 DDS will have spurious in the order of 70 to 80 dB below carrier. The 10 bit D/A in the DDS used in the Ten-Tec rig may be only 50 dB down. But there is a significant difference in cost for a 10 bit D/A v.s. a 14 bit one. In all cases having the D/A on the same chip with the DDS logic is an advantage because the product can be controlled in manufacture for best system performance. This is why all DDS employ current output D/A converters rather than voltage output. Voltage output would introduce more distortion producing components and add nothing to an application that is going to convert current to voltage in a terminating resistor of a low pass filter.

The measured spurious in a AD9850 DDS operating at 100 MHz clock rate is shown in Fig 2 below. The position and magnitude of the spurious frequencies move with changes in the dialed in frequency. Normally all frequencies at or higher than the second harmonic are attenuated with selectable cutoff low pass filters.

Figure 2 is borrowed from John Roos's K6IQL recent article "A Precision DDS for the Frequency Measurement Tests" published in QEX March/April 2013. This is an excellent article on both DDS performance and limitations and on its application to pre-

(Continued on page 7)

(Ham Tech from page 6)

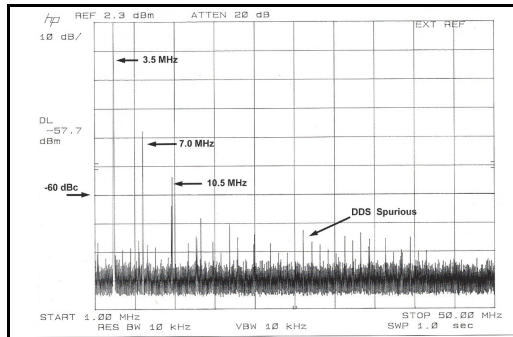


Figure 2, AD9850 DDS Spurious with 100 MHz Clock and a Dialed In Frequency of 3.5 MHz.

cision frequency measurements. It is recommended reading for those looking for a more in-depth discussion of the DDS plus you will learn a little about modern day frequency measurements.

Next month - The summer season is on its way and summer means antenna building to Hams. I have planned a four part series on wire antennas starting in May with a critical look at what's lacking in those old favorites, the Windom including the off center fed modern variants and the G5RV.

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

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



**Monthly Puzzle**

Don - WA2DUE, wa2due at arrl dot net

Review and answers to last months puzzles:

The speed of a 12 volt motor is controlled by a variable resistor. At the lowest speed the motor draws 0.02 Amperes and at its highest speed draws 1.2 Amperes. What is the ohmic range of this variable resistor? To provide a 75% safety factor what should the resistor wattage be?

My solution was to assume that the variable resistor was set to zero Ohms for the highest speed. Therefore the motor presented a 10 Ohm resistance at that speed. An equation of  $12/(10 + r) = 0.02$  is solved to provide  $r = 590$  Ohms. The range therefore is 0 to 590 Ohms. The maximum power dissipated in the resistor is when the current is at 0.6 Amperes and then the resistance is at 10 Ohms. This results in a power of 3.6 Watts. A 5 Watt potentiometer would meet the 75% safety factor requirement.

A coal burning electric utility is required by law to remove 85% of the smoke stack pollutants. The costs for this is given by the equation  $C = (80,000p)/(100-p)$  where C is the cost in dollars and p is the percentage of removal. If the law was changed to 90% what would be the additional cost to the utility?

Solution: Solve the equation for p = 85 and then again for p = 90 and take the difference which will be \$266,667.

Fred, W2EKB, and Bob KD2ADL submitted solutions. Thank you both.

For April let us try these gems:

(Continued on page 10)

## Not a State Territories

### Part 3 - The United States Virgin Islands

The United States Virgin Islands like American Samoa and Guam is a territory of the United States. The islands consist of St. Thomas, St. John, and St. Croix, along with Water Island and many other minor islands.

The islands were named by Christopher Columbus in 1493 for Saint Ursula and her Virgin followers. During the following 200 years many European powers held the islands. In 1754 they became Royal Danish colonies. At the beginning of WWI the United States feared that Germany would seize the islands and use them as a submarine base. On 17 January 1917 Denmark sold the Islands to the United States for \$25 million in United States Gold and the United States took possession on 31 March 1917.

Here are some interesting facts and symbols of the U.S. Virgin Islands:

Their official name is The Virgin Islands of the United States.

Bird, Yellow breast, also called sugar bird or banana quit

Calling code, 340

Flower, Yellow elder

Language, English

Motto, United in Pride and Hope

National Anthem, Star Spangled Banner

National Day, Transfer Day celebrated on 31 March

Nickname, The American Paradise

Official song, The Virgin Islands March  
Time Zone, Atlantic Standard Time (AST, UTC-4)

More interesting stuff about the United States Virgin Islands:

Saint Thomas: Nickname is Rock City.

The capital of the Virgin Islands, Charlotte Amalie is located on Saint Thomas. Cyril E. King airport Kelsey Grammer and Elrod Hendricks are from Saint Thomas.

Saint John: Nickname is Love City. Sixty percent of the island is protected as Virgin Islands National Park. No airports

Saint Croix: Nickname is Twin City. Largest island. Has an airport.

Horace Clarke, a major league baseball player for the New York Yankees was born in San Diego Padres in Saint Croix.

The flags of six countries have flown over the Virgin Islands before Old Glory - Spanish, Dutch, British, French, Knights of Malta, and Danish.

The average temperature is 77 degrees in the winter and 82 degrees in the summer.

Cattle are raised on all three islands.

The United States Virgin Islands is the only U.S. dependency whose road traffic drives on the left. To complicate matters, most cars are imported from the U.S. mainland so the steering wheel is on the left side. Ugh.

There are about 4,600 hotel rooms.

There are three amateur radio clubs in the Virgin Islands:

NP2VI - Saint Croix ARC

KP2SJ - Saint John ARC

KP2D - Virgin Islands ARC

My first contact with the United States Virgin Islands was on 3 March 1998 at 20:48 on 18 MHz (I was KC2AZU) with WP2Z.

73 from the State of New Jersey, the QTH of SJRA, the oldest continually operating radio club in the United States and the best.

Mary, KV2M

## To All Members Having The Receiver Project Designed by Mario, N2AK

I have a 'finishing kit' ready to help you complete your rcvr project.

The kit consists of the following functional additions:

- a. RF gain control
- b. Bandsread (fine tuning) pot

The finishing kit includes:

- a. Clear plastic front panel
- b. front panel artwork, which is suitable for frequency calibration
- c. A clear plastic enclosure cover, which keeps the project stay dust-free while making the components visible
- d. The 3 knobs needed for the front panel controls.

To complete the kit, you will need to do some mods to the off-board wiring such as adding the bandsread pot. There are no pc board changes required. One hole will have to be drilled in the rear panel to move the headphone jack there, which frees-up its former location for the bandsread pot. You will also have to mount 2 small L brackets that hold the cover to the main box.

I will supply detailed instructions and photos to make the kit as easy as possible.

My reimbursement cost for these parts is \$10 for everything and \$7 if you don't want the plastic cover.

Send me an email if you are interested and I probably can have the kits by the April meeting .73,

Mario, N2AK  
dianoramd at verizon dot net

## President's Message

Ken – K2WB

Don WA2DUE has completed his job as nomination committee chairperson. He presented his slate of candidates. (Great Job Don!). One additional nomination for the director positions was accepted from the floor. More nominations will be solicited at the April meeting and an election will be held at the May General Membership Meeting.

If you or someone you may know would like an opportunity to serve your radio club have a friend nominate you at the April General Membership Meeting.

Membership renewals are still trickling in, if you have not renewed now is the time to do so. Otherwise you will miss out on receiving harmonics and other club benefits

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.



Your Finished Radio Should Look Like This!

*(SJRA Leaps from page 4)*

of all that I have met" is a famous quote from something. I am truly honored and proud to have met so many really great people both in our past and our present. Thank all of you for the privilege of being the Historian for the Greatest Radio Club in the world.

73 to all and I am History  
Mary, KV2M

*(Monthly Puzzle from page 7)*

The distance between the Earth and its Moon varies over the course of the orbit of the moon, from 356,700 km (221,600 mi) at the perigee and 406,300 km (252,500 mi) at apogee. What time elapses in each case between a radio signal transmitted from Earth, reflected off the Moon and returns to the same place on Earth?

In a standard baseball field the diamond is a square 90 feet on a side. The pitchers mound is 60.5 feet from the home plate. How far is it to first base from the pitchers mound?

Please send solutions or comments to wa2due at arrl dot net.

The SJRA VE team congratulates the following individuals who have given permission to post their recent Amateur Radio License achievements in Harmonics.

Test session date: 04/10/2013

**David Staimon**

43 Mitchel Court  
Marlton, NJ 08052

**Fredrick Seel**

159 Richards Rd.  
Bridgeton, NJ 08302

Both individuals have passed the Technician Class License exam

*(Meeting Minutes from page 3)*

Minutes of the March meeting were approved on a motion by N2HQL/KV2R

Treasurers report was tabled.

New members by Mary KV2M - David Staiman, no call; sponsored by WY2J. Accepted on a motion by N3AVT/KV2R.

Historian - Presentation of 1948 or 1949 member list. A sheet was passed around asking if you were born when this list was printed.

Health and Welfare - Kathy was playing Nana all day. Gordo is off the respirator, W2ORA is fine except tired. The cards are going out as usual.

Programs - April, Hilltop to Hilltop; may, Storm Robotics Team; June, Field Day wrap-up. There was some discussion as to what programs the members would like to see. This will be the question of the April meeting.

Website - A new feature is *Field Day operators schedule* with a link to sign up. There is also a link to the board of directors. Harmonics online is scheduled for this month. Award nominations should be available by July. Some pricing for needed material hardware was presented. A motion by N2HQL/N3RG was passed to supply \$235 for hardware and \$20 per month for service.

VE testing is ready for next week. A review of materials was held for the test team.

Repeater; still has problems. WC2K is still not able to get up on the tower. There was a proposal regarding taking over the Pine Hill system. A motion to explore the possibility was presented and passed. Motion by N3AVT/N2HQL.

**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](mailto:VE@SJRA.org). A calendar and more information can be found on the SJRA web site.

**April Meeting**  
***Fourth Wednesday***

**April 24, 2013**

**“Our Meetings are Smoke Free”**

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:**

This month is going to be a very interesting meeting!! Our Guest speaker will be Walt Andariese. He will be speaking on the subject that he appropriately entitles “Hilltop to Hilltop in 1840 – Signals Across New Jersey.” Should be a Great Evening!

**April 2013 Health and Welfare:**

Last report on Gordo Skorup, N2YU, is that he has improved from where he was and he has now moved into a rehab hospital.

Happy Birthday to our members with April birthdays: 14- Michael Temme-Soifer, KC2MTM; 16- Betty Fletcher, KB2WDE; and 21- Miguel Ramirez, KC2HMG.

Kathy Edwards, KM2KME

**First Class Mail**

South Jersey Radio Association  
PO Box 1026  
Haddonfield, NJ 08033

