



# HARMONICS

1916

South Jersey Radio Association

2016



## I'm EXTRA Ignorant

Dan, KB6NU, cwgeek at kb6nu dot com

On Sunday, I received the following e-mail from a reader:

"Just wanted to let you know I passed the General exam using your study guide. It was very helpful. I am now generally ignorant whereas before I was only technically ignorant. Ha!"

My reply to him was:

"Well, if you're generally ignorant, I guess that makes me EXTRA ignorant!"

This isn't just a joke--being ignorant is part of the hobby. Amateur radio operators will always be ignorant about something or other. Even if you could master every facet of the hobby at some point in time, your mastery would be short-lived as the technology continued to advance.

Over the course of my amateur radio career, we've gone from equipment that primarily used vacuum tubes, to solid-state gear that first used discrete transistors and then integrated circuits, to software-defined radios. I could have, at some point, simply given up on the new technology and still enjoyed amateur radio. Some guys do that, and that's OK. It is only a hobby after all.

I'm not one of those guys, though, and if you're not one of those guys, then you have to resign yourself to being ignorant. But, that's a good thing, as long as you realize that you're ignorant. Realizing that

you're ignorant will spur you on to learn new things and accept new challenges.

Recently, I realized that I'm mostly ignorant about satellite operation. I know some of the basics from having read articles and writing about the topic in my study guides, but I have never made a contact using a satellite. I think that might be one of my next challenges. With the advent of CubeSat, there are many new satellites up in the air and many more opportunities to have interesting contacts.

So, what are you ignorant about? By that I mean, of course, what's going to be your next challenge in amateur radio?



*When he's not challenging himself with new things, Dan falls back on something he knows pretty well--operating CW. You'll find him mainly on the 80m, 40m, and 30m bands. Dan is the author of the "No Nonsense" amateur radio license study guides, and blogs about amateur radio at KB6NU.Com, and you can contact him by e-mailing cwgeek@kb6nu.com.*



## 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@sjra.org](mailto:sjra@sjra.org) SJRA's web page: [www.sjra.org](http://www.sjra.org)  
 SJRA VE Team: [ve@sjra.org](mailto:ve@sjra.org) is the SJRA/ARRL VUCC card checker  
 Joe Fisher, KC2TN, is the SJRA/ARRL WAS card checker

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 ★ **Harmonics** is now available for SJRA members 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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### Officers

**President:** Ken Botterbrodt, K2WB  
**Vice Pres.:** Jon Mac Millan, W2MC  
**Treasurer:** Ray Golley, N3RG  
**Rec. Sec:** Lou Priestley, N2HQL  
**Cor. Sec:** Dennis Cioffi, AC2FO

### Directors:

Roy Herman, WB2EOD  
 Rich VonLintig, KV2R  
 Rick Lawn, W2JAZ  
 Ira Weinstein, W2IRA  
 Tony Canuso, N2ATB  
 Ted Dean, KD2ARD  
 Al Witner, N3AVT

### Committees:

**Historian:** Vacant (Please Volunteer)  
**Membership:** Alan Handley, K3WWT  
**Field Day:** Ken Botterbrodt, K2WB  
**Contests:** John Doran, W2FDJ  
**Repeater:** Joe Fisher, KC2TN  
**Programs:** Rick Lawn, W2JAZ  
**H&W:** Roy Herman, WB2EOD; and Dara Herman, KC2THQ  
**Awards:** Rick Lawn, W2JAZ  
**Hospitality:** Jean Priestley, KA2YKN  
**Nets:** John Fogleboch, WY2J  
**Publicity:** Vacant (Please Volunteer)  
**Picnic:** Vacant (Please Volunteer)  
**Ways & Means:** Ray Golley, N3RG  
**Property:** Jon Mac Millan, W2MC  
**Web Site:** Ira Weinstein, W2IRA

### Harmonics Staff:

**Publisher/Editor:** Ted Groke, W2TAG  
**Alternate Editor:** Rick Stoneking, W2RDS  
**Circulation:** Mary VonLintig, KV2M; Jim Vecchiola, KR2T

### LOCAL WEEKLY NETS

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

### Harmonics Deadline

Articles submitted for the next Harmonics will be accepted until Monday, June 6, 2016. Email: [ted.w2tag@gmail.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

### Membership Meeting Minutes of April 27, 2016

The meeting was opened at 1932 by Ken, K2WB, at the Gibson house in Marlton, New Jersey. The minutes of the March meeting were approved as printed in Harmonics, on a motion by N2HQL/W2WAZ. Ray, N3RG, gave the treasurers report, which was approved on a motion by WB2EOD/KV2R.

Ken mentioned that there may be some problems with the membership committee, indicating the possible need for a committee attendee during the membership meetings. Ken also mentioned that most of the older Harmonics newsletters were scanned and available through the webpage.

Joe, KC2TN, stated the repeater was up and the nodes were working. The fusion part of the repeater would be shut down at commute times of day and during net.

Contests: Pins were passed out to those who participated in the VHF contest. Upcoming contests; May 27 thru 29 is the CQ worldwide W PX Contest for CW 10 through 160 M; June 9 thru 19 is the SJRA 100th Anniversary USO Party; all modes, all bands except 60, 30, 17, and 12 M. Repeater contacts are acceptable; June 11 thru 13 is the a ARRL June VHF Contest; June 25 and 26 is Field Day.

Club stuff by Joe, KC2TN: New logo hats available. A few vintage logo hats are also available. New logo large and small patches are still available.

Programs by Rick, W2JAZ: May, the South Jersey Storm Robotics Team.; June, Field Day planning; July, Field Day Wrap-up.; August, satellite operation; September, the member auction.

Ken showed the 100th anniversary QSL Card.

Al, N3AVT, gave the VE report.

We broke at 2035 for refreshments.

John Hill, W2HUV, made a presentation about Operating Remote Super Stations Over the Web.

### BOD Meeting Minutes of May 4, 2016

The meeting was opened by Ken, K2WB, at 1930 at the Gibson house. Minutes of the April board meeting were approved as printed in Harmonics. Motion by N2HQL/AC2FO. Ray, N3RG, gave the treasurers report, which includes 104 members. The report was approved on a motion by W2MC/WB2EOD.

Regarding the membership committee; Alan, K3WWT, has been doing a bang up job as the membership committee but is unable to attend meetings. No volunteers were found at the membership meeting. There was some discussion regarding a possible volunteer who will consider the position because we need a committee attendee at the meetings.

Ray, N3RG, suggested we lower the price of the Associate Membership, which would be limited to only receiving Harmonics by email and without voting privi-

*(Continued on page 9)*

## HAM TECH

Vol 7 No. 5 by John - WY2J

wy2j at arrl dot net

### AM to SSB - A Technology History

Part 1 of 3: The Early Years 1906 to 1946

**Introduction** - The first broadcast of voice and music occurred in 1906 when Fessenden successfully amplitude modulated an Alexanderson alternator. This AM signal was received by numerous galena crystal envelope detector receivers in spark telegraphy stations. By the end of WW-1 vacuum tubes were beginning to overtake alternators and spark as transmitters while the vacuum tube regenerative receiver made short work of the crystal receiver. AM was the dominate modulation for voice and video over the next four decades and AM is still with us on the medium frequency broadcast band and international broadcasters use it on the short wave bands. But AM is long gone in the amateur, commercial and military communication worlds. Why did this happen, what replaced it, and what other technology was required to support these new modes of communication? Answering this question is the objective of this and the following two issues of HAM TECH.

**AM And Its Cousins** - We think of classical AM as the only amplitude modulated mode but there are four.

1. Classical Amplitude Modulation (AM)
2. Double Sideband Suppressed Carrier (DSBSC) aka. DSB
3. Single Sideband Suppressed Carrier (SSBSC) aka. SSB
4. Vestigial Sideband AM (VSB)

**Classical AM** - We know its history in ham radio from the HAM TECH columns pub-

lished in the October, November and December 2015 issues of Harmonics.

**SSB and DSB** - Single and double sideband suppressed carrier amplitude modulation resulted from work started in the 1920's by Bell Telephone Laboratories (BTL) to find a better modulation than classical AM for use in frequency multiplexing telephone channels on to long distance open wire transmission lines. They recognized the spectrum and power inefficiencies of AM as well as the problems created with multiple carriers.

This early frequency multiplex system used 12 SSB telephone channels spaced 4 KHz apart between 0 and 48 KHz. A second set of 12 channels operated between 52 and 100 KHz to provide the reverse path of a full duplex system. The SSB signal was generated by the filter method using a copper oxide ring quad double balanced modulator that BTL had invented, to produce DSB signals. These were then sideband filtered by low frequency LC filters. SSB was selected over DSB because of the better than 2 to 1 spectrum advantage of SSB thus allowing 12 channels instead of 6 within a 100 KHz transmitted bandwidth. Also the DSB demodulation process is significantly more complex than that for SSB. DSB did not find an application until 1960 when it was used in the FM stereo multiplexing process. The SSB phone system made long distance calls affordable for businesses and wealthy individuals. The rest of us had to wait for digital time division multiplexing and fiber optic transmission line technologies to develop.

**VSB** - Vestigial Sideband AM was invented in the late 1930's by TV engineers to allow fitting a 525 line 4.2 MHz bandwidth B&W video signal into a 6 MHz channel after am-

*(Continued on page 5)*

(Ham Tech from page 4)

plitude modulating a carrier. It is essentially a method of filtering out part of the lower sideband of AM with acceptable video distortion. It was used in all commercial TV starting in 1946 and ending a few years ago when TV transmission went digital.

**SSB and DSB Performance** - Both SSB and DSB suppressed carrier modulations have significant advantages over AM when used in voice communication. These include a reduced width spectrum, reduced average power, increased signal to noise ratio, elimination of multiple carrier heterodyning and reduced selective fading due to ionosphere distortion.

The spectrum width for AM, DSB and SSB signals modulated with a 300 to 2700 Hz voice signal is as follows;

1.	AM	5.4 KHz	100%
2.	DSB	5.4 KHz	100%
3.	SSB	2.4 KHz	44.4%

A comparison of the power in an AM modulated signal with that of SSB or DSB is rather straight forward as long as we measure peak power. A comparison with average power requires a detailed knowledge of the modulating signal which for the human voice is always changing. For SSB or DSB modulation that peak power is dependent only on the modulating signal. Figure 1 below shows the case for DSB but will be similar for SSB.

A comparison with the same modulating signal and AM modulation is shown in Figure 2. The peak power is much higher due to the introduction of the carrier signal which delivers no useful information.

If a sine wave modulating signal is as-

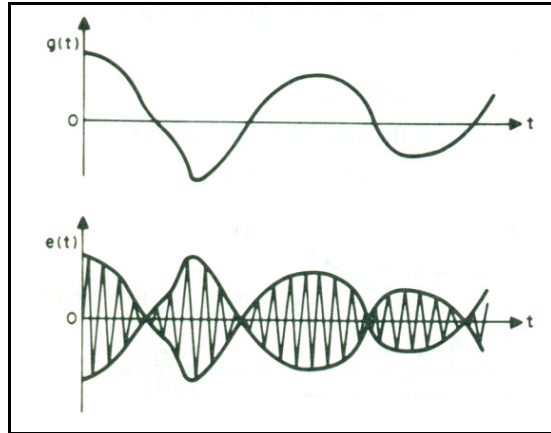


Figure 1, Modulating Signal (top) and DSB Modulator Output (bottom)

sumed the sideband power would be only 1/3 of the total power. The carrier which contributes nothing to the desired signal is 2/3 of the total power.

On a S/N basis both SSB and DSB have a 6 dB advantage over AM using peak power comparisons. This assumes that the input S/N of the AM carrier to the envelope detector is large. If this condition is not met,

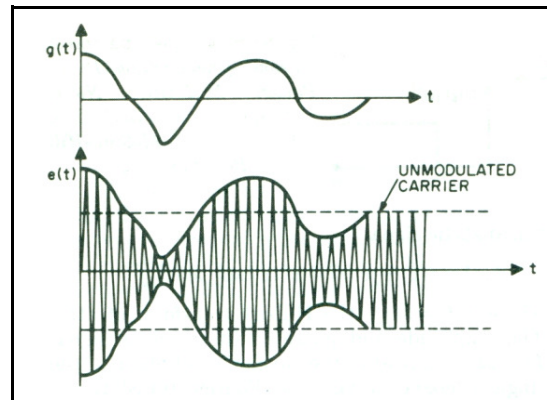


Figure 2, The same modulating signal as Figure 1 with AM modulation (bottom).

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## **SJRA 100th Anniversary Party**

As our plans for the 100th banquet comes to completion we will need to give the caterer an estimated head count.

So far I have heard from only 12 members committing to only 25 guests. Please let me know ASAP your intentions. Guests are welcome.

The date: Saturday July 30th, 2016 starting at 11:00 to 15:00 EDST

Where: Trump National Golf Course in Pine Hill, NJ (the old Ski Mountain location).

Tickets will be \$45 person, this includes:

Meal

Cake

Chance to win the door prize a Yeasu FT-100 Radio, DJ and more...

There will be cash bar available.

Menu will be available soon.

What I am asking the SJRA and friends of the SJRA is to let us know if you plan to attend and if so how many will be in your group. Members are welcome to be friends and family to attend.

This is a once in a life time opportunity to celebrate with the Oldest Continuously Meeting Radio Club in North America

Please RSVP to this preliminary request (don't send money at this time).

More details to follow.

Thank you and 73, de Ken, K2WB

Ken *at* k2wb *dot* com

## **100<sup>th</sup> Anniversary Happenings**

Ken – K2WB/100

So far the 100th anniversary committee has had 20 meetings (more to come). Just to keep everyone up to date here is where we are.

Over 100 coffee cups have been sold. There are plenty more to go. Mugs may be acquired to SJRA members by a minimum donation of \$10.00. There will be coffee mugs available at the General Membership Meeting on 25th May.

So far I have only 22 committed to coming to the party. Please let me know as soon as you can if you are coming.

The QSO Party rules are available and have been sent to all members and friends of the SJRA. Pass the word. Help will be needed to administrate and operate. Also, discussions of the SJRA large area special event. The SJRA QSO Party will run for 10 days in June. We are now looking for operators, sign up early and often, you can do your part of the new SJRA

We are starting to achieve our goals, but we still need help. Our anniversary party is only 76 days away.

With that said, Joe KC2TN is selling 100th Anniversary clothing and hats, in addition he has patches. Contact Joe should you want to have the "New" SJRA Look.

The Web Team needs help with content for our history time line. Please contact Rich KV2M if you would like to help.

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*(100<sup>th</sup> Anniversary Happenings from page 6)*

Mark KD2JPW and Rich KV2M are working feverously in putting together our 100th Anniversary book. Booster Ads are available:

Full Page \$100

½ Page \$50

¼ Page 25\$

Single line booster \$5

This is a good way to show you support for the SJRA and be part of the history of the club.

We need your help. Please contact me if you are interested in helping with the 100th. If you like to help out in the last minute now is a good time to help!

Please email me your picture showing your SJRA!! Email them directly to me ken@k2wb.com. Go to our web site to see where the SJRA logo has been.

Also, we are looking for old SJRA photographs. If you can scan them at the highest possible resolution. If you need help we could scan them for you so that they can be included on our website for all to share.

73, Ken K2WB/100

## Items for Sale

50 Foot Free Standing Tower (not heavy duty). Tower is on the ground in two pieces that bolt together at the 30 foot level. \$100.

*All proceeds from the sale of this item will be donated to SJRA.*

Contact Ted, W2TAG

Tabernacle, NJ

ted.w2tag at gmail dot com

(609) 268-8460

## President's Message

Ken – K2WB

The May meeting program promises to be very exciting. Our friends "Storm" from the robot club of Lenape and Cherokee High Schools will be showing us their latest competitor. Demonstrations in previous years were very impressive and I trust this one will be at the same.

We were able to get all Harmonics scanned from 1945. This means we have a collection of email spanning over 71 years. While looking through them, I found out that the president of the SJRA had a seal, who knew (see page 10). More importantly there is a Field Day song.

We need your help with Field Day (it will be here before we know it) mark your calendars. Field Day is June 25-26 with setup on the 24th. We will be having several workshops such as erecting temporary antennas, operating etc. Please help us be volunteering early and helping with this club event.

We need help! So far Al, K3WWT is handing the front end work at contacting new members and helping them get their applications in and so forth. But he is unable to come to meetings. At the last general membership meeting everyone agreed that our Membership Committee is a very important club function. When I asked for help no one offered to help. What we need is a person that comes to the meetings handle membership applications at the meeting and to work with Allan, K2WWT. So will someone please *volunteer* for this important function.

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*(Presidents Message from page 7)*

Our 100th QSO party will be upon us quickly. I started getting sign ups to operate K2AA from June 10th through June 19th. This is our time to shine and be proud of the SJRA being 100 years old. There is an opportunity for all members of the SJRA to get involved. You can operate K2AA/100 from anywhere as long as you have prior permission from the license Trustee. I plan on putting K2AA/100 on the air from the top of Camelback Mountain in the Poconos on the weekend of June 10th. I'll will have at least 40m SSB and perhaps some CW. There is a potential of putting PSK.

If you have a favorite mode or band, and time of operation sign up and be part of the fun. Also, don't forget to participate as yourself, by signing as K2AA. The rules are really simple. Log date, time (utc), Call contacted, name, mode and power for each contact. Each QSL has its own power multiplier.

I put a feeler out to get a preliminary head count to for the 100th Anniversary banquet. So far only 5 members came forward giving just 20 people. Please let me know sooner than later so that can give the caterer an idea of the size and scope of the party on Saturday July 30th from 11:00 to 3:00 PM. More information to follow.

Lastly, there are several members would like to come the meetings. If you are in the Mt. Holly area and plan on coming to the meeting please contact me.

If you have questions or like to help please contact me at ken *at* k2wb *dot* com or call me at 856.983.1924.



## Test Session Report for: April 13 and May 11, 2016

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

Scott D Schindewolf, KD2KWQ

11 Alder Circle

Lumberton, NJ 08048

Earned his Tech

Lawrence C. Nelson Jr.

5Whiting St.

Berlin, NJ 08009

Earned his Tech

Albert H Ziegler

3 Lancelot Ct.

Mount Laurel, NJ 08054

Earned his General

B. Miller

29 Lenapiwettuck Rd.

Medford, NJ 08055

Earned his Tech

Bruce D. Canino

107 Clayton Rd.

Williamstown, NJ 08094

Earned his Tech

Donald J. Cavallaro , KD2EHE

430 Kelham Ct.

Mount Laurel, NJ 08054

Earned his General

	Tech	General	Extra	Total
To Date	101	43	22	166

## 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**

**Last month we presented the following:**

A car battery can deliver 55 Amperes at 12 Volts for one hour but requires 1.3 times more energy to recharge due to its inefficiency. Assume a charging Voltage of 14 Volts is applied, what is the maximum time it will take to fully charge this battery using a current of 7.5 Amperes?

Answer: Full charge= $(1.3)IVt=(1.3)(55\text{ A})(12\text{ V})(1.0\text{ h})=858\text{ Wh}$ .  
Time= $E/IV=858/((7.5\text{ A})(14\text{ V}))=8.2\text{ hours}$ .

The difference between these two Roman numbers (MMXV and MCMLIX) is the age of one of SJRA's most prominent members. How old is he? And can you guess who I am referring to?

Answer: If you don't remember how to convert Roman to Arabic numerals, you could use the Translator in Google. 2015-1959=56. I have in mind Ken, K2WB.

**For May let us consider these problems:**

My daughter has a square garden plot each side of which is 20 feet long. To redress the garden she wants to add 1 inch of mulch over the entire area. The mulch bags at a local home improvement store contain 2 cubic feet. How many bags should she buy?

Six 10K resistors are connected in series to form a circle. If you place a constant voltage source of 100 Volts across one of the resistors what amount of current will flow? If you place the same constant voltage source across two adjacent resistors, what amount of current will flow?

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

*(Meeting Minutes page 3)*

leges at the meetings. The motion was approved motion by N3RG/W2JAZ. This motion requires a change to the bylaws eight committee consisting of K2WB, N3RG and N2ATB. They will work on and present the required by law change for approval.

Harmonics: There will be only three more Ham Tech columns before the retirement of the author. New material will be needed to fill the spot.

Joe, KC2TN, stated the repeater is still working, He will review controllers at Dayton to find a possibly suitable controller. He then led a discussion regarding the Pine Hill repeater.

History: Mark, KD2JPW, stated things are getting along the history is being written, he is working on the timeline and assessing the needs for the display at the banquet.

Trustee: Ken, K2WB, reports no OO cards as of yet.

Health & Welfare by Roy, WB2EOD; made cards have not gone out as yet, he needs an update of the database. Ray, N3RG, suggested that we drop sending cards and print the birthdays in Harmonics only. We should continue sending get well and sympathy cards. The committee agreed so the last birthday cards will go out when the remaining stamps are used

Programs; Rick, W2JAZ, reports he needs to move his presentation and will find a fill in. Ken, K2WB, stated he had some older DVDs that could be shown in an emergency.

Webmaster: Ira stated he upgraded Drupal and has a security upgrade due.

*(Continued on page 10)*

*(Ham Tech from page 5)*

typical of weak signal conditions, then there are added losses for the AM case and the S/N advantage of SSB or DSB over AM can approach 9 dB. This is like comparing an 800 watt transmitter to a 100 watt one, very significant.

Ham radio doesn't have assigned frequencies, it has pile ups or at a minimum closely spaced signals. With AM the carriers beat with each other in the envelope detector to form annoying audio tones. This is why adjustable notch filters were built into AM receivers starting 60 years ago. With SSB there are no carriers and no tones.

With AM the carrier is in phase with the sidebands. If the phase of the carrier rotates and approaches 90 degrees the signal fades to near zero. This phase shift can result from distortion introduced by the ionosphere under disturbed propagation and it can wipe out your reception even on S-9+ signals. With SSB the carrier is never transmitted so the problem goes away.

**Next Month** - We look at the two 1950's implementations that introduced SSB to ham radio and identify the technology problems that needed solving.

Get your **No Nonsense Amateur Radio License Study Guides** by Dan, KB6NU at:

[www.kb6nu.com/study-guides](http://www.kb6nu.com/study-guides)

Email Dan at:

[cwgeek at kb6nu dot com.](mailto:cwgeek@kb6nu.com)

*(Meeting Minutes from page 9)*

Ken called the first Field Day meeting for May 10th.

100th Anniversary Members: Jeffrey Harris, K2 DFE, from Arizona as number 20; Jon O'Connell, K2QA, as number 21. These new Centennial members were approved on a motion by W2MC/K2ARD.

The anniversary book will have room for boosters at \$100 per page/\$50 per half/\$25 per quarter, with single-line boosters available at five dollars per line. Cost of the banquet will be \$45 per person. Many displays will be set up at the banquet.

No old business was discussed.

New business head shots of board members are needed to be placed in the book. The Superstition Club wants to become *Friends of K2AA* with privileges to sign/100, etc. The motion was accepted on a motion by N2HQL/WB2EOD.

No other business was to be handled so the meeting was closed by Ken, K2WB.

Lou, N2HQL, Rec. Sec.



## 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 \$20 (*New Lower Price*, 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 *at* SJRA *dot* org. A calendar and more information can be found on the SJRA web site.

**May Meeting:****Is the Fourth Wednesday, May 25, 2016**

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:**

South Jersey Storm Robotics Team

**SJRA Member June Birthdays**

William Bowen, KD2DOP; Dennis Cioffi, AC2FO; Mario Dianora, N2AK; Roy Herman, WB2EOD; Jon MacMillan, W2MC; Robert Novelle, W2RWN; Jean Priestley, KA2YKN; Raymond Smith, KD2FMX.

Health and Welfare Co-chairpersons: Roy, WB2EOD, and Dara, KC2THQ

**First Class Mail**

South Jersey Radio Association  
PO Box 1026  
Haddonfield, NJ 08033

