



HARMONICS

1916

South Jersey Radio Association

2019



President's Message

Ken- K2WB

2019 is finally here, I like to wish everyone a very Happy and Healthy New Year.

Congratulations to all the award winners of the SJRA awards this year.

I have compiled a list of Top 10 things to do in 2019. These are in no particular order.

- Check into the SJRA Nets (we have several).
- Help an older Member come to a meeting.
- Participate in a Club sponsored contest like November Sweeps or VHF Contests.
- Help a new ham get on the air.
- Help with Field Day.
- Volunteer for a committee.
- Show children or someone amateur radio.
- Encourage someone to join the SJRA.
- Make a suggestion to the Board of Directors.
- Write an Article for Harmonics or the web site.

Our treasurer Roy, WB2EOD has indicated that renewals have been coming in. If you have not renewed your membership, please do so soon. Don't forget to update your information such as email address and mailing address so that you can continue to receive Harmonics. Indicate if you want to stop receiving Harmonics by regular mail with your renewal.

The club has an email list that is a great way to reach out to all of the members of the club if you have a question or an item for sale. This service is only available to members of the SJRA and will be the only way to receive harmonics by email. If we have your email address you will be receiving an email from sjra-members-resquest@mailman.qth.net inviting you to join the list or you can join directly by going to <http://mailman.qth.net/mailman/listinfo/sjra-members>. Remember to include your Callsign with your name. To send an email to the list, just send it to sjra-members@mailman.qth.net and it will go to all of the members in the list automatically.

On Sunday, March 24th the SJRA will be holding our first radio conference. Topics will help new and experienced hams with getting on the air or getting updated with newer modes of operation. More information to come in the upcoming weeks.

If you need help or have questions, contact an Elmer at elmers@sjra.org. A number of members of the club have volunteered to offer assistance. It is simple, just send an email with your question and someone will help.

After many years Rick, W2JAZ would like to stepdown as the Awards/Programs chair. If you are interested in helping in either of these jobs, please contact me ASAP. Thank you, Rick, for your support with these jobs for the club.

That is all I have for now,

73's

de Ken K2WB

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 Rooms 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 SJRA website: www.sjra.org or from Alan Handley, K3WWT, 610-532-5407 Email: sjra@sjra.org SJRA's web page: www.sjra.org

SJRA VE Team: ve@sjra.org 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 MacMillan, W2MC
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 Al Witner, N3AVT

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Historian: Mark Walters, KD2JPW
Membership: Art Arnold, N2CPR and 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: Matt Grohgans, N2IDW
Publicity: Vacant (Please Volunteer)
Picnic: Vacant (Please Volunteer)
Ways & Means: Roy Herman, WB2EOD
Property: Jon MacMillan, W2MC
Web Site: Ira Weinstein, W2IRA

Harmonics Staff:

Publisher/Editor: Al Ziegler, KD2ST
Alternate Editors: Ted Groke, W2TAG and Jon MacMillan, W2MC
Circulation: Jim Vecchiola, KR2T

 ★ 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/Groups/view/southern-new-jersey> ★
 ★ *****

LOCAL WEEKLY NETS

Mondays FM Net; Swap Net every 4th Monday	K2AA Repeater, PL: 91.5	145.290 @ 8PM
Fusion on 2 ND & 4 TH Thurs.	K2AA Repeater, DN mode	145.290 @ 8PM, Fusion
6M SSB on 1 st Thurs.		50.150 MHz USB @ 8PM
2M SSB on 3 RD Thurs.		144.260 MHz USB @ 8PM

Harmonics Deadline

Articles submitted for the next Harmonics will be accepted until Monday, February 11, 2019. Email: harmonics@sjra.org

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

Holiday Party Meeting of December 19, 2018

The meeting was opened at 1910 by Ken, K2WB, who greeted all and declared the meeting open for all necessary business.

Roy, WB2EOD gave the treasurer's report, amid trying to collect/balance monies for the banquet. The report was approved on a motion by Al, N2AVT/Jack, WA2HJG.

Minutes of the November meeting were approved as printed in Harmonics- Motion by Lou, N2HQL/Bob W2RLE.

The repeater was reported as "working".

Nets- were mentioned as to scheduling.

Programs- W2JAZ- Auctions Jan-Feb; March - SDR. Rick mentioned the club luncheon second Saturday of each month, currently at Bob Evans, RT 73 & Fellowship Rd. 915 A.M.

VE- 253 tests administered so far, Next Session Jan 16th.

Radiosport- W2FDJ. Schedules passed around, Jan VHF & North American QSO party Jan 19-20; Feb 1-2 10-10 intl Winter phone; Feb 16-17 ARRL Int'l DX (CW).

No old business.

New Business; Conference to be held 3/24 at Hotel ML, speakers still needed. Membership Drive for 2019- sponsor four new members- get 2020 dues free.

The meeting was turned over to Dennis, AC2FO for the banquet & awards ceremonies (See Awards chairman's report).

Submitted by Lou Priestley, N2HQL.

Minutes of December 5, 2018 BOD Meeting

The meeting held at the Gibson House, was opened by Ken, K2WB at 1930.

Minutes of the November board meeting were approved as sent to members of the board. Motion by N2HQL/N2CPR.

Corresponding secretary reported sending three thank you letters out. He reported receiving an e-mail regarding a tower and antenna for sale in Virginia, requesting we list it. Holiday party- 53 signed up so far. Dennis paid the deposit with his personal Credit Card. The club data base will be sent to Dennis for further actions.

Roy, WB2EOD made the treasurer's report, 14 paid up for 2019 so far, 123 paid for 2018. Report was accepted on motion by N2CPR/N2ATB.

New Members by Art, N2CPR- John Price, KD2QYC. He was accepted on a motion from N3AVT/WB2EOD.

New membership drive for 2019 was discussed, four new members sponsored for 2019 gets 2020 dues paid. Motion by N2HQL/W2FDJ

Harmonics by Al, KD2ST- To include reminder for club brunches on second Saturday of the month at Bob Evans on Fellowship road at RT 73. Also included will be a renewal form, and "a Hams Holiday Poem" submitted by Mark Waters.

Repeater- no news.

Contests - W2FDJ: Club QSO party results in, working on results. We are work-

(Continued on page 6)

SJRA 2019 RADIO CONFERENCE

An event to share ideas, experiences, knowledge and fellowship among persons interested in Amateur Radio.



At The Hotel ML

915 Route 73
Mt. Laurel, NJ 08054



Sunday, March 24, 2019

Open to the Public

8:30 AM to 5 PM
\$35 Entrance Fee per person.
Lunch Included.

Sponsored by The South Jersey Radio Association: <https://sjra.org>

Event Talk-In: K2AA Repeater
145.290 Mhz (91.5 PL)

- Bring your HT and we will help program in local repeaters.
- Limited test equipment (power supply & dummy load) will be available to help diagnose and test radios.

Conference Highlights

- ◇ Volunteer Exam Session (Free to all Applicants) starts at 8:30AM
 - ◇ Special Event Station K2AA
 - ◇ Demonstrations
 - ◇ Keynote Speaker
 - ◇ Seminars– Preliminary Topics (subject to change):
 - I got my license and now what?
 - My first QSO (Live Demo)
 - Introduction to Modes of Operations
- Demo of Various Modes; CW, AM, SSB, FM, C4FM, FT8 & DMR
 - QSLing– LOTW, eQSL, QSL Bureaus
 - Amateur Radio Clubs
 - Antennas– simple to extreme
 - Radio Sport (Contests)
 - Elmer Panel

For additional information or to purchase tickets please e-mail:
conference@sjra.org

Items for Sale

Icom 7300, Like new with box and accessories. Power cable, mike, manual and disk. \$750. If interested, please contact **Art, N2CPR (856) 489-1533**

Cushcraft Model A-3WS 3 element WARC bands beam antenna still in the box never opened.

I am asking \$450.00 for it. If interested please contact **Jack Froehlich, W2AF at 856-809-2965 or 609-352-9696**. The antenna can be picked up at my residence in Atco, N.J. Thank you for your time.

- AV-640 Patriot Hi-Gain 26' vertical, 10 - 40 transmit, 10 - 160 m receive, 2m capable; Diamond vert 2m/440Hz mounted on mast next to home, with separate coax feed, also for sale;

- A wall-mounted grounding system in crawl space with two surge protectors, 2m/440Hz and 10 - 160 Hz both on copper bus, grounded to driven copper rods outside, coax feed from surge units thru floor to shack.

- Gin pole, rope and sheave (for use in HF vertical takedown/setup) included
- Price on above items is "best offer".
- Must pick up (20' box truck recommended, to avoid retuning antenna); I can assist with takedown.

House comes with above equipment already installed; to be listed with realtor for sale in two weeks. If interested, please contact **Allen Wrigley, KI2T (609) 203-5597**

Kenwood TS-870 with Kantronics KAM-II TNC for RTTY.

Original Kenwood Box, Cables, Power Cord etc. Clean Non-Smoking environment. Contact: **ken at k2wb dot com**



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Estate Auction and Winter-Spring Cleaning Members Auction

It's time for Monte Hall and "Let's Make a Deal!" Following the business session at our January membership meeting there will be an Estate Auction and Winter-Spring Cleaning Members Auction. You are encouraged to bring good equipment that is excess to your needs but a treasure for someone else. Why not avoid eBay costs and shipping charges by bringing us some of your unnecessary radio gear that is still in good condition. Who knows, it might be a found treasure to someone else and just what they are looking for. Sellers will be assessed 5 percent of the sold price and only if the item sells. Proceeds go to the SJRA.

Please do not bring items that should be saved for the February White Elephant sale. Do not bring old computers, DVRs, VCRs, Stereo equipment and other non-radio items. All unsold items must be removed by the seller following the auction. All items must be marked with the sellers call sign on a 3x5 card. Happy Bidding!

Hopefully this will attract some attention and I'll also send it out via the email reflector. Happy New Year!

Rick,
W2JAZ

(Meeting Minutes from page 3)

ing on figuring the Center of club membership. Less than 15 participants in Nov SS. Jan 19/20 North American QSO party, & ARRL Jan VHF Contest.; 2/1-2 10-10 intl Winter 10 mtr contest, phone; 2/8-9 CQWW RTTY WPX; 2/16/17 ARRL intl DX Contest CW. Art, N2CPR highlighted Jan VHF contest, and the Date of OCT 19 for the Club QSO party.

Health & Welfare- WB2EOD, December cards sent out, January list sent to Harmonics.

Nets- Doing OK

Programs- by N2ATB- plaques ordered for awards, Schedule filled through April-Jan estate sale, Feb white elephant sale, March- SDR.

VE- No Changes- but FCC to make FRN changes in March.

Field Day- need to repack trailer.

Old Business- Conference-\$35/head, need 50 attendees. To be held 24 March 2019. Ken to purchase door prize for drawing.

New business- Art, N2CPR-Penn Wireless & Philmont using Fusion on Thursday - may cause interference with our fusion net.

Ken to contact township to reschedule our January meeting on Jan 3 due to non-availability of Gibson house on Jan 2.

Submitted by Lou Priestley, N2HQL.

WORLDWIDE DISTRIBUTION



Ken Hartley
Manager
N2OHD

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Radio Sport aka Contests

John, W2FDJ, johnd152 at Verizon dot net

Member's Activities:

Please send your thoughts and ideas to me at **johnd152 at Verizon dot net** for publication.

Club QSO Party (was Oct 13-14, 2018)

Results are in for our 2nd annual Club QSO Party.

Individual Winners:

High Score overall	Dick, K2GMY
High Score CW and Phone	Dick, K2GMY
High Score SJRA	Dick, K2GMY
High Score Benicia ARC	Dick, K2GMY
High Score PackRats	Bob, W2SJ
High Score Mountain Toppers	Jon, W2MC

Dick, K2GMY	86 QSO's	1,522 Points
Dom, KD2EPM	35 QSO's	872 Points
John, W2FDJ	25 QSO's	537 Points
Dick, K2GMY/39	33 QSO's	533 Points
Jeff, K2DFE	41 QSO's	405 Points
Ken, K2WB	5 QSO's	310 Points
Jon, W2MC/20	16 QSO's	296 Points
Jon, W2MC	10 QSO's	260 Points
Bob, W2SJ	11 QSO's	244 Points
Christian, N3PLM	3 QSO's	203 Points
Michael, KB1JEY	32 QSO's	192 Points
Frank, AA2AW	15 QSO's	123 Points
Holden, KD2JPV	8 QSO's	64 Points

Note: Major differences were whether bonus stations were worked. Each = 100 points.

Club Winners:

Club with most contacts	SJRA
SJRA	222 QSO's
PackRats	46 QSO's
Benicia ARC	33 QSO's
SJ Mountain Toppers	16 QSO's

Clubs with highest percentage of club members contacting their own club stations:

Small Club	SJ Mountain Toppers	18.7%
Medium Club	Benicia ARC	14.1%
Large Club	SJRA	11.6%

Overall, four clubs and 13 individuals participated and filed summaries. The next Club QSO Party will be held on Oct 19-20.

Upcoming Contests - see arrl.org or contestcalendar.com for rules and more details.

Every Tuesday only

Phone Frey 9:30PM-10PM. (yes 30 min)
(ten weeks -4 times a year)

Every Wednesday only

CWops Mini-CWT test 8 -9AM, 2-3PM, 10-11PM (three one hr sprints)

Every Thursday only

NCCC Sprint 9:30PM-10PM. (yes 30 min)

Every Thursday only

NCCC RTTY Sprint 8:45-9:15PM. (30 min)

North American QSO Party Phone 1/19-20 Sat 1PM EST to Sun 1AM. HF; Phone

ARRL January VHF Contest 1/19-20 Sat 2PM EST to Sun 11PM. 50 Mhz & up, Any mode

ARRL Int DX Contest CW 2/16-17 Fri 7PM EST to Sun 7PM HF; CW

CQ 160 Meter Contest SSB 2/21-22 Fri 5PM EST to Sun 5PM 160 mtr.; SSB

North American QSO Party RTTY 2/23-24 Sat 1PM EST to Sun 1AM HF; RTTY

ARRL International DX Contest 3/1-3 Fri 7PM EST to Sun 7PM HF; SSB

If You Have Not Already Done So, It's Time to Renew Your SJRA Membership

Current dues are:

- \$30 Regular Member.
- \$22.50 for Seniors 65 years of age or older
- \$15 student.
- \$15 each additional family member.

Please include any updated information in the membership application form which can be accessed at: <https://sjra.org/sites/default/files/2018%20RENEWAL%20AND%20NEW%20MEMBER%20FORM%20updated%203%202014%202018.pdf>

Make check payable to South Jersey Radio Association and mail to:

Roy Herman, WB2EOD
19 Bryce Road
Voorhees, NJ 08043

SJRA also accepts PayPal. Please send money to dues@sjra.org

Send as family and friends so PayPal takes no fee or include an extra \$1.

Any questions please email [<treasurer@sjra.org>](mailto:treasurer@sjra.org)

Tnx and 73,
Roy Herman, WB2EOD
Treasurer



SJRA Monthly Breakfast

Join us on the second Saturday every month at 9:15 am at the **Bob Evans Restaurant**; 601 Fellowship Rd, Mount Laurel, NJ 08054 for an informal get together.

SJRA Holiday Party December 19, 2018



The Inner Limits

Copyright Scott Holland, NK2N 2019

Last month, I introduced the design of a digital oscilloscope. I included a simple block diagram and provided a list of inputs and outputs. At the time, I was entertaining the use of several different low cost development kits from several companies.

I was familiar with two of the three companies I suggested as possible sources of development kits, those were Texas Instruments and Analog Devices. The third company was Microchip, the reason I considered that company was that I have a friend in Chicago that spent many years developing micro-controllers that would be embedded in a home appliance. This friend suggested this company as a source.

The criteria I used in selecting the development kit were the following:

1. Cost
2. tools available to help me develop software.
3. features of the development kit.
4. add on modules for the development kit.

I only looked at Microchip and Texas Instruments (TI). Both had what I considered a reasonable cost. Both gave me the features I needed to do the digital oscilloscope. The TI development kit had all the features I needed on the one board development kit and had some additional features I liked. It's cost was \$195 plus shipping and taxes. The Microchip development kit with an add on module gave me a lower price point.

When I looked at the development tools that came free to use with the Microchip development kit, I was satisfied with the choice.

With the approach of taking a laptop computer along with a development kit to help

implement the final product, I knew I would have to develop software that ran on the laptop as well as software that would run on the development kit. I expected the interface between the laptop and the development kit to be a USB interface that hopefully most of the readers are somewhat familiar with. A USB port can provide power to the development kit along with a serial interface to transfer data back and forth.

I also listed the controls for the oscilloscope as well as the inputs to the oscilloscope last month. Some of the information I provided may be revised as the design progresses, but I am not sure about that yet.

I initially was looking seriously at the TI development kit until I decided to take my friends advice. Note - I took a reasonably close look at the development kit and the add on board I needed before deciding on Microchip.

It is now too late to change my mind unless I wish to spend more money on this project. The development kit is supposed to come today (relative to when I was writing this article. Note - I am writing January's article in November and I should have January's article complete by Thanksgiving.

Microchip calls some computers micro-controllers and some microprocessors. Their differentiation appears to be whether or not the development kit is able to include an operating system. In addition, some of these micro-controllers come with a DSP (Digital Signal Processor) as an add on computing engine to the micro-controller. For those of you interested in the details of this development kit, please go to microchip.com to find additional information. The kit I am choosing is the Explorer 16/32 Development kit, part number DM24001-3. Warning, the Microchip web site is a challenge to navigate, you might

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(The Inner Limits from page 9)

find Digi-key's website more useful.

I am not going to compare the two approaches here, if you are interested in both approaches, I leave it to the reader to research this further.

The DM240001-3 includes a 16 bit PIC24 MCU. You can also replace the PIC24 MCU or buy the development kit with an alternate micro-controller. This might come in handy in the future when I will want to have a DSP available.

I have also selected a mikroBUS(TM) accessory board, the TMIK024 that is manufactured by MikroElektronika. This accessory board provides 4 A/D converters through the Microchip MCP3204 integrated circuit. This chip provides four single ended input analog to digital converters at up to 100 kilo samples per second.

The cost for the development kit and the daughter board is \$122.99 including shipping and taxes.

An analog to digital converter will allow me to sample an analog signal (a voltage) repeatedly at a rate that will work for an audio channel.

The frequency range that the ear can hear is up to around 20 kHz. If I look at the upper frequency range for a telephone line, I would expect it to go up to about 3 kHz.

I also anticipate needing some external circuitry to interface the various inputs to the digital oscilloscope. This may be necessary because more than likely, the input signals we might be dealing with will be a signal centered at a zero voltage that swings back and forth both above and below that zero voltage. The A/D converters are designed to deal with signals from zero volts up to an upper voltage (maybe 5 volts).

The two items I have ordered from Microchip are most of the hardware design with the

above exception.

Note - the cost of the various development kits is different from Microchip and from Digi-key even though Microchip is the source of the parts. It pays to price shop.

I leave club members with a question, have you ever built your own electronic project? What was it? Was it a kit or something you designed or was it something out of a book such as the ARRL handbook? Maybe Ken will ask this at a future meeting as the question of the day.

Next month, I will look at the software needed to implement the digital oscilloscope. Two pieces of software need to be developed: first, the software that runs on the development kit to record two waveforms and second, the software that runs on the laptop that lets you control the operation of the oscilloscope.

My email for this series of articles for any questions or comments is:

amazing.inner.limits at gmail dot com

New SJRA Swap Net

SJRA will host a swap net on the fourth Monday of every month (Except for December).

The swap net will be part of the regular Monday night 2-meter FM net (analog) on the K2AA repeater (145.290 MHz, PL- 91.5) starting at 8pm.

Jon, W2MC; and Roy, WB2EOD will alternate as net controllers.

Please call in if you are interested in buying or selling any amateur radio related equipment.

SJRA Jackets, Shirts, Hats

Order NOW - Next order going in soon!



Spring Jacket is \$51 (S,M,L,XL), Fall Jacket is \$58 (S,M,L,XL),
 Shirts are \$28 (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 third Wednesday of each month, except Nov & Dec. TBD. The location is: New Brooklyn United Methodist Church; 1336 E. Malaga Rd. Williamstown, NJ 08094. Registration is at 7:00 PM and testing begins at 7:30 PM. 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.

January Meeting:**Is the Fourth Wednesday, January 23, 2019**

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

Program For January:

Estate and Members Winter Spring Cleaning Auction.

SJRA Member February Birthdays

February Birthdays are: Martin Conrad, WB2EHY; Bob Eboch, W2RLE; Ted Groke, W2TAG; Jack Imhof, N2VW; Shawn MacDonald, K2SMD; Riley Stoneking, N2RAS; Leonard Warren, KD2FMV; Noah Weinstein KC2YAT

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

February Meeting:**Is the Fourth Wednesday, February 27, 2019.****First Class Mail**

South Jersey Radio Association
15 Pelham Road
Marlton, NJ 08053

