

The "Official Organ"

The official newsletter of the Johnston Amateur Radio Society.

May 2018 edition

JARS Presidential Picnic:

The Annual JARS Presidential Picnic is this Saturday, May 12th at White Deer Park Nature Center 2400 Aversboro Rd, Garner, NC 27529, 11:30 pm until 2pm at the Maple Shelter in White Deer Park. At our last meeting, the membership voted on doing pot luck. So, if everyone that is coming will prepare enough of your favorite dish to share with everyone else, we should have a great time.



JARS Meeting Next Thursday:

We usually don't have a regular meeting May because of the Presidential Picnic. However, we will be having a business meeting next Thursday, May 17th at Bernie's Southern Gourmet Buffett. Bernie's is where the Mc Call's used to be in Clayton. The address is 10365 US 70 Business Hwy W. We will be eating around 630 pm and meeting will start at 7pm. This is to give the club a chance to try another location so we can eventually decide on a permanent meeting location.

In this month's "Official Organ"

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Johnston County ARRL VE Team

News from Our President:

April Meeting

Thanks to all that showed up at our April meeting. I appreciated the speaker Scott Lewis AB4SL giving us a talk on Auxcom. I hope everyone will get on board and sign up for the fema courses.

<https://training.fema.gov/is/courseoverview.aspx?code=IS-100.b>

<https://training.fema.gov/is/courseoverview.aspx?code=IS-200.b>

<https://training.fema.gov/is/courseoverview.aspx?code=is-700.a>



later time. 25 NMO and various other mounts were completed.

<https://training.fema.gov/is/courseoverview.aspx?code=IS-800.c>

And when you complete the certification send the certificate to Scott.

I counted 44 attendees at our meeting and we voted in three new members. Eric Palmatier K2EZX now N4EZX, Ryan Leathers KX4JZ, Arther Barker KX4IZ. Be sure to welcome them aboard.

JARSCOM Update

At the last meeting Paul Dunn asked for and received help to drill holes in JATSCOM to mount antennas on the roof. Most of the crew came the first Saturday to do a lot of the work but Van and new member Ryan Leathers KX4JV finished the drilling and completed the job at a



Many thanks to the crew

Doug Williams KS4TI

Van Lee KM4TC

Wally Courie NC1NC

Gerald Conkling, Jr K3CON

Stan Disbrow WA2KQY

Paul Dunn KD4BJD

Ryan Leathers KX4JV (New Member)

Charles Bruckner KG4MXV (soon to be new



member) He volunteered to get our lunch!

May Meeting

In addition to our picnic I have scheduled a May Meeting on May 17 at Bernie's Southern Gourmet 10365 US HWY 70 W, Clayton, NC. Members suggested on trying different venues. This was the same place Mccall's was located. The dinner starts at 6:30. We will have some old and new business topics.

73's N4MQU

Life on the Farm:

Life here on the farm has been great, well, sort of. Velda is coming along greatly from her shoulder surgery last month. She saw the doctor this week and he was very impressed with how she was doing. He wants to see her back in a month, at which time, he will probably release her. She has started physical therapy

and is doin great there. The only problem, is that I am afraid she will recover enough to want to try throwing the frying pan at me again. In the meantime, she did bust me upside of my head with a rolling pin. I didn't even know we had one of those things, as I have never seen her making biscuits.

We have been fighting with 50 Floor for over a month to get new flooring in our kitchen and laundry area. The guy from 50 Floor, which by the way, is a full time real estate agent and part time floor salesperson, told us that we had to replace most of the subflooring, and even recommended a person for the job. Well, the sub flooring person would do a little bit and then get a bigger job and left us high and dry for a week or so. Anyway, once we got the sub flooring fixed, the guy from 50 floor comes back about a week later. We originally wanted vinyl flooring in the kitchen and laundry area. He quoted us a price for the vinyl that was as high as the laminate we got last year for the living room. I told him that I would think about it and get back to him.

We called Empire Today on Wednesday, the guy came today and told us that the vinyl comes in large rolls and that we would be having a lot of waste and that tile flooring would be the best bang for the buck. We got a quote for both vinyl and tile flooring. The tile flooring was considerable cheaper than what 50 floor wanted for the vinyl.

Long story short, Empire will be out here on Monday to put the flooring down.

73 de Mike(KD4MC/C3PO), Velda (K4VJC), Remmington (Hairy Hound) and Tabitha (Krazy Kat)

JARS Movie Night:

Just a reminder movie night will be Sunday May the 20th. Will let everybody know what we will be seeing when I know. We will be going out to eat after movie.

Ham Radio Humor:



ARRL News:

ARRL Executive Committee Hears Updates on Parity Act, FCC Petitions, Small Satellites

[Meeting](#) on April 21 in Windsor, Connecticut, the ARRL Executive Committee (EC) heard a status update on the Amateur Radio Parity Act and on regulatory matters from ARRL General Counsel Chris Imlay, W3KD. Imlay reported that ARRL continues to work multiple avenues in its efforts to secure passage of the bill. He said ARRL continues to have solid support from

House leadership, and most notably from Representative Adam Kinzinger (R-IL), who, Imlay noted,



US Representative Adam Kinzinger (R-IL).

has worked tirelessly to see the Parity Act become law.

Regulatory

The EC also discussed the FCC's recent *Notice of Proposed Rulemaking (NPRM)*

regarding the deployment of "small satellites" by colleges, universities, and commercial entities using experimental licenses on Amateur Radio spectrum. The EC was told that the International Amateur Radio Union (IARU) has changed its previous policy regarding the coordination of small satellites (CubeSats), and that FCC policy is overly restrictive in some respects and insufficiently protective against commercial exploitation of amateur spectrum in other respects. AMSAT has requested ARRL's input.

The EC agreed that ARRL's comments should reflect our support for World Radiocommunication Conference 2015 [Resolution 659](#) and IARU policies. In addition, ARRL (a) will support and encourage college and university Amateur Radio experiments where the sponsor of the experiment is an amateur licensee and all operation is in amateur spectrum, and (b) will discourage commercial or Part 5 experimental operations using Amateur Radio spectrum.

The EC asked Imlay to file ex parte comments in support of *Petition for Rule Making* [RM-11775](#) relating to frequent changing of vanity call signs, and to file ex parte comments on ARRL's *Petition for Rule Making*, [RM-11785](#), noting that the Canadian government has implemented a new, contiguous 5 MHz band and permitted a power level of 100 W. The EC also requested that Imlay support a request by certain ARRL members for an STA or experimental license for higher terrestrial and EME power levels in the 76 - 81 GHz band, to permit Amateur Radio experimentation.

The EC asked Imlay to share with the National Telecommunications and Information Agency ([NTIA](#)) ARRL's concerns regarding an NTIA study to use 3450 - 3550 MHz for mobile wireless applications. That includes a portion of the 9-millimeter Amateur Radio band.

Updated OO Program Progress

ARRL Atlantic Division Vice Director Riley Hollingsworth, K4ZDH, the new chair of the Amateur Auxiliary Study Working Group, reported via teleconference that he'd met with the FCC's Laura Smith concerning implementation of an updated and improved Official Observers (OO) program. Several attorneys have reviewed the ARRL's draft memorandum of understanding, and several Commission attorneys who have reviewed the new manual for Volunteer Monitors will be providing feedback on the proposal. Once the FCC's comments are received and addressed, the Working Group will present its final report and recommendations to the EC.

The EC directed CEO Barry Shelley, N1VXY, to work with the Amateur

Auxiliary Study Working Group and Headquarters staff to update the full Board and membership on the status of the OO program and potential changes. In the interim, the ARRL Field Organization [may resume making](#) a limited number of OO appointments.

ARRL Governance

The EC discussed a wide range of options to most effectively update ARRL's *Articles of Association* and *Bylaws* and to bring proposed additions or revisions to the full Board for its consideration in July. The Board in January adopted new articles 15 and 16 to make the language of the *Articles of Association* consistent with Connecticut nonprofit corporation statutory language, but filing these with the state was postponed for additional fine tuning.



Article 15 addresses the issue of personal liability on the part of Directors, Vice Directors, staff officers, or volunteers regarding breach of duty in their respective roles, provided the breach did not involve a "knowing and culpable" violation of law, improper personal economic gain, a lack of good faith, and conscious disregard or sustained and unexcused pattern of inattention amounting to abdication of duty.

Article 16 would indemnify volunteer and staff officers, Directors, and Vice Directors for any action taken or any

failure to take action, with conditions similar to those spelled out in Article 15.

Pursuant to action at the January Board meeting, the EC reached consensus to develop a revised *Policy on Board Governance and Conduct of Members of the Board of Directors and Vice Directors* ("Code of Conduct"), using a template from the National Council of Nonprofits and an edited version of the current conduct code. An ad hoc committee was formed to draft a proposal to be presented at the fall Executive Committee meeting and, subsequently, to the full Board.

ARRL will publish white papers to explain changes to the *Articles of Association, Bylaws, and Code of Conduct*, in advance of the July Board meeting.

ARRL Asks FCC to Protect Amateur Radio Millimeter-Wave Bands

ARRL has asked the FCC to avoid authorizing developmental technologies in two Amateur Radio bands above 95 GHz that some radio amateurs may be unaware of. ARRL [commented](#) on May 2 in response to a *Notice of Proposed Rule Making and Order (NPRM&O)* in ET Docket 18-21, released in February. The so-called "Spectrum Horizons" proceeding seeks to make the bands above 95 GHz "more readily accessible for new innovative services and technologies." ARRL said that, while it agrees that "regulatory flexibility is justified" in the millimeter-wave bands above 95 GHz, due to the extensive frequency re-use possibilities, the FCC



ought to make two primary Amateur/Amateur Radio Satellite bands in that part of the spectrum unavailable for deployment of unlicensed Part 15 or Part 5 Experimental Spectrum Horizons devices. Amateur Radio has primary allocation status in the bands 134 - 136 GHz and 248 - 250 GHz, both shared with the Radio Astronomy Service, which is secondary.

"The amateur allocations require protection against increases in the noise floor due to aggregate radio frequency devices," ARRL said. "The bands are used ubiquitously and unpredictably, typically, but not always, at high elevations for research and development purposes and propagation studies, for terrestrial point-to-point, satellite, and Earth-Moon-Earth communications experimentation."

ARRL said it would oppose "any proposal to permit unlicensed devices or largely unregulated experimental operations" in the two primary Amateur Radio allocations in the range of spectrum the FCC is considering. "It is critical to preserve for Amateur Radio experimentation the current relatively quiet noise floor, and the positive RF environment that now exists in those two relatively small band segments," ARRL told the FCC. The League's comments noted that the secondary Radio Astronomy Service in those two

bands also requires a quiet RF environment.



ARRL said it also would oppose the authorization of Spectrum Horizons experimental authorizations in the two primary Amateur/Amateur Satellite allocations, operating under a new subpart for "Spectrum Horizons Experimental Radio Licenses" in the spectrum at issue.

"Overall, the Commission is on the right track in this proceeding," ARRL allowed. "Opening the millimeter-wave bands to expanded unlicensed operation is not unreasonable. Some, but not all, of the bands above 95 GHz can be removed from the Part 15 restricted band list without significant concern." But, ARRL concluded, "the Amateur Radio primary allocations at 134 - 136 GHz and 248 - 250 GHz, which are shared with radio astronomy, should be unavailable for either Part 15 operation or for other commercial development."

A promotional banner for Radio City. It features the Radio City logo on the left. The main text reads "RF Sharks! In Stock Now!" in large, bold letters. Below that, it says "SharkRF openSPOT UHF Digital Radio IP GW DMR/DStar/C4FM Fusion \$199.95*". At the bottom, there is contact information: "2653 County Road I, Mounds View, MN 55112 (763) 786-4476 Toll Free 1-800-426-2891 sales@radioinc.com" and a note: "*Offer expires 5-16-2018 Midnight L-5-10-2018". A small image of the SharkRF device is also present.

ARRL Announces 2018 QST Antenna Design Competition

The 2017 QST Antenna Design Competition was such a success that ARRL is doing it again this year, with a special twist. The 2018 competition challenge is to design the best LF, MF, or HF antenna *for limited space applications*. Entrants should send their best designs for evaluation according to the competition rules. Even designs that don't win a prize might still be eligible for publication in a future issue of QST. Only one entry per person (or team) can be accepted. The submission deadline is September 1, 2018, which allows plenty of time to build and test designs.



ARRL is offering three cash prizes for this competition. First place is \$600, second place is \$250, and third place is \$150.

Design and Submission Requirements

Antennas must be designed for one or more bands between 2200 meters and 10 meters, must fit within a 30 x 50 foot

area, and stand no taller than 30 feet at any point.

Participants must submit:

- Drawings with dimensions (hand drawings are okay)
- List of materials
- Description and summary of any measurements taken, including modeling and files (modeling is not a requirement)
- Photographs
- Discussion of observed on-the-air results and any comparisons with other antennas
- Submitter's name, postal address, and email address

All antennas based on submitted designs must be the sole creations of the entrants and not available for sale. Winners will be chosen based on ingenuity of design, mechanical and electrical safety, expected performance, and durability. The judges' decisions are final.

Entrants must be ARRL members. ARRL staffers and QST advertisers are not eligible.

Mail entries to:

QST

ATTN: Antenna Design Competition
225 Main St.

Newington, CT 06111

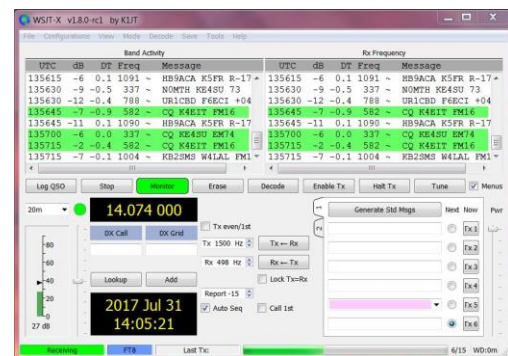
Participants also may [email their entries](#), including call sign and subject line of "2018 Antenna Design Competition." Those who need to submit more than 6 MB of material should use separate email messages. *Do not send*

compressed ZIP files, as these will be rejected.

Full details will appear in the June 2018 issue of QST.

Third Public Test of FT8 DXpedition Mode Deemed a Success

The third public test of [FT8 DXpedition Mode](#) on May 5 is being called a success. The goal of the exercise was to simulate a rare DXpedition pileup on FT8 by having many stations ("Hounds") calling and trying to contact a designated pseudo DXpedition station ("Fox").



"A

number of participants and would-be participants reported that propagation was spotty, at best," said Joe Taylor, K1JT, on behalf of the WSJT development group, which is sponsoring the tests. "Nevertheless, at AA7A, G4WJS, K1JT, and K9AN, we copied 405 unique call signs of stations acting as Hounds, and at least one Fox was worked by 305 of them. Many Hounds worked two or three of the Foxes."

Taylor said a shift from the announced operating frequency to 14.115 MHz was necessary before the test got under way to avoid RTTY contest activity. "Soon after 1400 UTC, they also learned that W1/KH7Z had some unexpected setup

problems and was unable to continue," he added. As a result, consequently W7/KH7Z took over as the Fox at 1425 UTC and continued operating until 1600. K1JT was the Fox between 1600 and 1700 UTC, and G4WJS stepped in for a short bonus run between 1710 and 1750 UTC, Taylor recounted.

FT8 DXpedition Mode permits a DXpedition station (Fox) to work several stations at a time, utilizing different "slots" for each contact. The downside is that the greater the number of parallel slots, the less power for each slot, with a penalty of 14 dB for five slots.

Taylor said the setup at W7/KH7Z is comparable to what will be used during the KH1/KH7Z Baker Island



DXpedition in June. "We operated in ways expected to provide the most thorough tests of the DXpedition Mode software," Taylor said. "The low-power, simple-antenna setup at K1JT may be indicative of what can be done from KH1/KH7Z when band conditions are poor."

The WSJT development group plotted the equivalent hourly contact rate for each 5-minute interval at W7/KH7Z. "This test run has shown that peak QSO rates with FT8 DXpedition Mode can approach 400 per hour, and that sustained rates well above 200 per hour will be readily achieved in good conditions," Taylor concluded.

He said the test also helped the team to identify "a few relatively minor software bugs" that need to be fixed.

Historic NSS Call Sign to be Reactivated for Naval Radio Station's 100th Anniversary

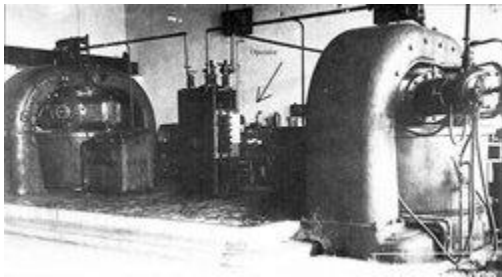
Historic US Navy call sign NSS will be reactivated during the 100th anniversary of the former Naval Radio Station in Annapolis, Maryland. Members of the US Naval Academy Radio Club (W3ADO) and the Potomac Valley Radio Club (W3GRF) will return the historic call sign to the air during the [Armed Forces Day Crossband Military/Amateur Radio Communications Test](#) this weekend.



operations from the site of the former Naval Radio Station on Greenbury Point will run from 1300 UTC on Saturday, May 12 to 0200 UTC on Sunday, May 13. Transmissions on CW and SSB will take place on 4,038.5; 5,330.5; 7,533.5; 9,447; 14,487, and 17,545 kHz. NSS will listen for callers on announced frequencies in adjacent Amateur Radio bands. Commemorative QSL cards will be sent for all contacts.

NSS began operation in 1918 as the Annapolis High Power Radio Station using two Federal Telegraph Company 500 kW Poulson arc transmitters and

four 600-foot towers, operating in the very low-frequency (VLF) region of the radio spectrum. At that time, VLF was believed to be the only part of the radio spectrum capable of supporting transoceanic radio communication; it would be a few more years before radio amateurs proved the major long-distance communications benefits of frequencies well above 1 MHz.



The pair of Federal Telegraph Company 500 kW Poulson arc transmitters installed at NSS-Annapolis in 1918. [US Navy photo]

NSS began regular operation in the HF bands about 10 years later, and that continued until 1976, when the station's HF mission was transferred to Naval Radio Station (call sign NAM) in Norfolk, Virginia. The 1,200-foot central tower and dozens of other towers and masts were demolished in 1999, although three iconic 600-foot Eiffel towers remain at the southern tip of Greenbury Point.

A [brief video history](#) of NSS is available on YouTube. The website of radio history buff Jim Hawkins, WA2WHV, also offers [a virtual tour](#) of NSS.

Iowa National Guard Exercise Pushes Communications Interoperability Boundary

An [Iowa National Guard](#) exercise in late April for the first time saw the use of a common digital mode among military, Amateur Radio, and Military Auxiliary Radio System (MARS) participants on the 60-meter interoperability channels. Military standard communications mode MIL-STD 188-110 was pressed into service to pass digital messages during Exercise Stable Mercury. Because Amateur Radio operators on 60 meters are not symbol-rate limited, all parties were able to use a common digital mode at a higher data rate to pass traffic. For RTTY or digital operation, radio amateurs must transmit on the center frequency of 60-meter channels with a bandwidth no wider than that of a USB signal.



The
April
23 -
24

communication exercise involved the deployment of Guard units across numerous incident command posts to operate cooperatively with federal, state, local, and auxiliary units. The scenario for the drill was based on an actual severe weather event that occurred 20 years ago, and the April exercise used radar feeds and storm spotter reports taken from the June 29, 1998, Iowa derecho to inform this training event. A derecho is an extended straight-line windstorm associated with a fast-moving cluster of severe thunderstorms.

Exercise planner and retired Colonel Rob Hedgepeth, KE0GSN, stated that a major training objective for Exercise Stable Mercury was to train in sending voice and digital messages among the various exercise participants via HF radio. The rationale was that introducing a common digital protocol would increase message throughput over what could be achieved using only voice modes.

MARS volunteers Mitch Winkle, AB4MW, and Steve Hajducek, N2CKH, prepared an Amateur Radio version of the software package that MARS members use to interoperate with military units employing the MIL-STD 188-110 serial PSK.

Amateur Radio rules impose a symbol rate limit of 300 baud below 29.7 MHz, restricting the types of digital modes that may be used. No such limitation applies on the 60-meter interoperability channels, however, allowing the Amateur Radio community to use the higher-rate Serial PSK mode that MARS and the military use.

The FCC proposed revising the Amateur Service Part 97 rules in response to the ARRL's so-called "Symbol Rate" *Petition for Rule Making* ([RM-11708](#)), filed in late 2013. ARRL had asked the FCC to change the Part 97 rules to delete the symbol rate limits in §97.307(f), replacing them with a maximum bandwidth for data emissions of 2.8 kHz on amateur frequencies below 29.7 MHz. Read [more](#). -- *Thanks to Army MARS Program Manager Paul English, WD8DBY*

In Brief...



**ARRL
Foundation
Announces
New Endowed**

Scholarship. The [ARRL Foundation](#) has announced a new scholarship, the Joel R. Miller (W7PDX) and Martha C. Miller STEM Scholarship. The ARRL Foundation will administer the scholarship, endowed through the generosity of Joel R. Miller, W7PDX, and Martha C. Miller, of Portland, Oregon. The scholarship is intended to provide funding toward the educational expenses of an Amateur Radio licensee residing in the ARRL Northwestern Division (Alaska, Idaho, Montana, Oregon, or Washington) pursuing higher education. Applicants must be US citizens but without regard to gender, race, national origin, or handicap status, and be pursuing an associate's or higher degree in the fields of science, technology, engineering, or mathematics (STEM) at an accredited institution of higher education. Applicants must have a 3.0 GPA or higher at a high school or an accredited institution of higher education for the academic year immediately prior to the application period. The ARRL Foundation Scholarship Committee will submit its choice of nominee to the ARRL Foundation Board of Directors to approve by majority vote. The scholarship will be endowed with an initial gift of \$25,000, with earnings funding the annual award of \$1,000 annually. The first scholarship will be awarded in 2019.

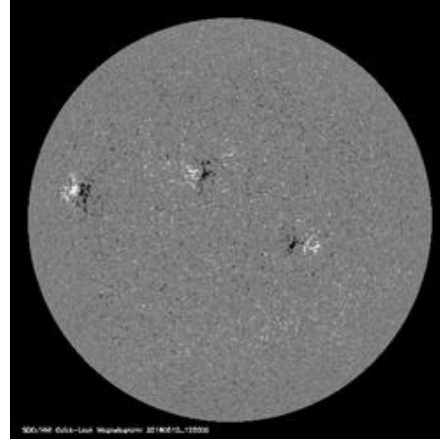
Show me the money! For the second year, the Barry Amateur Radio Society ([BARS](#)) of South Wales in the UK



has gained permission to operate within the Royal Mint, and regulator Ofcom has granted the call sign GB4RME ("[Royal Mint Experience](#)"). The theme of the June 1 - 2 event is "Covert Radio as used in World War II." At the same time, The Royal Mint will release a new 10-penny coin bearing a James Bond 007 theme. "They asked for our support in setting up a World War II covert radio display in keeping with James Bond exploits in the movies," said ARRL member Glyn Jones, GW0ANA. "Shame we can only 'play with our toys' for 2 days, but the mint is a very busy place, pressing coins and awards for around 82 countries, 24 hours a day." The building's lead roof "RF killer" and razor-wire "Faraday cage," plus electronic alarms, give the radio amateurs "loads of technical problems to overcome," Jones said. GB4RME will operate on SSB, CW, digital modes, and satellite. QSL via GW0ANA with SAE. Logs will be uploaded to Logbook of The World.

The K7RA Solar Update

Tad Cook, K7RA, Seattle, reports: Sunspots reappeared this week, after none showed from April 28 through May 3. Average daily sunspot numbers over the May 3 - 9 reporting week increased 3.6 to 14.6. So far this year, 56% of the days have been spotless. For all of 2017, the rate was exactly half -- a total of 104 days. In seemingly counterintuitive, yet not unusual, fashion, average daily solar flux declined by 1 point, from 69.3 to 68.3.



Solar activity

The sunspots are the most prominent feature of this SOHO satellite [MDI](#) (Michelson Doppler Imager) image for May 10. This image shows the magnetic field in the solar photosphere, with black and white indicating opposite polarities.

continues to decline, and over the past few years we've been expecting solar minimum to arrive about 2 years from now. Some observers have suggested, however, that the decline may be more rapid than anticipated.

Predicted solar flux is 70 on May 10; 69 on May 11-12; 68 on May 13-15; 67, 69, and 70 on May 16-18; 72 on May 19-25; 70 on May 26; 68 on May 27 - June 8; 70 on June 9; 72 on June 10-21, 70 on June 22, and 68 on June 23.

Predicted planetary A index is 12 on May 10; 5 on May 11-16; 42, 12, and 8 on May 17-19; 5 on May 20-31; 18, 25, 20, 16, 12, and 8 on June 1-6; 5 on June 7-12; 42, 12, and 8 on June 13-15, and 5 on June 16-23.

Sunspot numbers for May 3 through 9 were 0, 13, 14, 14, 14, 25, and 22, with a mean of 14.6. The 10.7-centimeter flux was 66.5, 67.8, 67.6, 67.2, 69.6, 69.6, and 69.6, with a mean of 68.3. Estimated planetary A indices were 4, 4, 20, 31, 17, 14, and 16, with a mean of

15.1. Estimated mid-latitude A indices were 3, 4, 12, 24, 14, 12, and 13, with a mean of 11.7.

[Send](mailto:k7ra@arrl.net) me your reports or observations to k7ra@arrl.net.

Johnston County ARRL VE Team:



The Johnston County ARRL VE Team will be holding our monthly VE session for new licensees and those wishing to upgrade on Monday, May, 28th at the American Red Cross, located at :805-A S. 3rd Street in Smithfield. Testing starts at 7pm. The cost is \$15.00. If already licensed, you need to bring a copy of your license that we can send to the FCC. Also, you will need a valid photo ID.

If not licensed, the cost is still \$15.00. Also, you should go to: <http://wireless.fcc.gov/uls/index.htm?job=home> and register for an FRN number before the session. Make sure you bring that number with you to the session.

To register, or obtain more information, contact Michael Callam, KD4MC, at: mcallam@centurylink.net.

JARS Officers for 2018

President	Mark	N4MQU
V. President	Stan	WA2KQY
Secretary	Peggy	KJ4OPH
Treasurer	Paul	KD4BJD
Membership	Dianne	KE4VNX
Net Whip	Stephen	KJ4QNW
Ham of the Year	Dianne	KE4VNC
Editor	Mike	KD4MC

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HAM RADIO OPERATOR



That's it for this month. Hope to see you at the picnic and the meeting.

73 de KD4MC

