

RCA AMATEUR RADIO CLUB

JANUARY, 2014

MONTHLY NEWSLETTER

INDIANAPOLIS, IN

THE NEXT MEETING OF THE RCA AMATEUR RADIO CLUB WILL BE
TUESDAY, JAN 14th, 6:30 PM AT [G.T. SOUTH'S](#),
5711 E. 71ST STREET, INDIANAPOLIS, IN

RCA ARC NEWS

SUMMARY OF THE DECEMBER MEETING – Thanks to all those who attended the Dec. meeting. We had a good turnout. Comments were made that articles found in the Dec. Newsletter were of interest. K9RU announced that FD plans with the Indy Radio Club at Camp Belzer have been started. The antenna mast and rotor that supported the HF beam on the Technicolor building was left up at Thomson request when the ham antenna was removed, Thomson wanted to use the mast and rotor for some RF testing. We left the rotor for their testing with the understanding they could have the mast but we were to get the rotor back when they were finished. We were informed that Technicolor was going to take down the unused antennas on the roof and if we wanted the rotor we needed to get it soon and we did retrieve it. We talked about the club taking down the mast but after looking into it Thomson has extended the mast for the MMDS antenna which will make it more difficult to take down and our insurance does not cover us on that site any longer. Those who attended the Ft. Wayne hamfest commented that the crowd was good but the flea market keeps getting smaller. It is still a good place to meet old friends and the forums were good. Repeater report: The '88 repeater is operating normally. W9ZB reported on the recent ARRL Frequency Measuring Test. K9RU reported that the 10M and 6M bands have been really good. The ARRL 10M contest is this coming weekend. The ARRL's petition on baud rate/bandwidth was discussed.

CONDITIONS WERE GREAT FOR THE 10M CONTEST! -- This is the peak of the sunspot cycle conditions on 10 meters were great with openings around the world. On CW activity was from 28.0 to 28.15 MHz and on phone it was from 28.3 to 28.7 MHz. With this much activity it was easy to work DX with low power and a small station. These contests provide a great opportunity to work DX and these condition won't last long after we go over the sunspot cycle peak. The next big contests will be the ARRL DX contest and the CQ WXP contest. – K9RU



A portion of the 10m CW band during the Dec. 14-15 10M Contest at AF9A

NEXT TEST AMATEUR RADIO LICENSE TEST SESSION --

Time: Saturday, January 11, 2014, 12:00 PM (Walk-ins allowed)

Location: Salvation Army EDS Training Facility, 4020 Georgetown Rd., Indy, IN 46254-2407

Contact: Jim Rinehart, K9RU. k9ru@arrl.net 317 495-1933

ARRL FOUNDATION SCHOLARSHIPS – The Indianapolis Amateur Radio Assoc., operator of the Indy Hamfest, sponsors a \$1000 scholarship. Amateurs living in Indiana will have preference. Applications for the 2014 scholarship process must be received at the ARRL Foundation by 11:59 PM Eastern Standard Time on January 31, 2014. Transcripts must be received by February 14, 2014. Scholarship recipients are typically notified in mid-May by USPS mail and email. More information can be found here: <http://www.arrl.org/scholarship-descriptions>. Please pass the word if you know of someone who may be interested.

HAMFESTS, OPERATING EVENTS

Jan 18 - 20 ARRL VHF Contest ,1900 UTC Saturday, ends 0359 UTC Monday
Feb 22 Third annual Brownsburg Hamfest, Brownsburg, IN <http://www.hcars.org/>
Feb 22 Cabin Fever Hamfest, LaPorte, IN <http://lpcarc.org>
Mar 08 Terre Haute Hamfest & Computer Expo, <http://www.w9uuu.org/>
Apr 12 North Central Indiana Hamfest, Peru, IN <http://www.nci-hamfest.net/>

All dates, unless otherwise stated, are UTC.

<http://www.arrl.org/contest-update-issues> Contests updates

<http://www.hornucopia.com/contestcal/> WA7BNM Contest Calendar

<http://www.arrl.org/special-event-stations> ARRL Special Event Stations page

http://www.arrl.org/exam_sessions/search ARRL training page for test sessions

<http://indyhams.org/events/> Indiana events and public service opportunities.

ARRL FILES COMMENTS ON ITS “SYMBOL RATE” PETITION

The ARRL has filed [comments](#) with the FCC on its own *Petition for Rule Making RM-11708* (plus [Erratum](#)) — the so-called “symbol rate” petition. Although the League rarely files formal comments on its own petitions, ARRL General Counsel Chris Imlay, W3KD, citing the high level of interest in the proceeding, said, “[T]his is clearly an exceptional circumstance.” RM-11708 proposes to drop the symbol rate limit in §97.307(f) of the FCC Amateur Service rules, substituting a maximum occupied bandwidth of 2.8 kHz for HF data emissions.

“More than 700 comments have been filed thus far, which is a large number indicating that the issue of data communications is an important one in the Amateur Radio Service,” the ARRL commented. “It is also gratifying that the majority of the filed comments are supportive of the proposals in the *Petition*.” Imlay said the League also would file reply comments — ie, comments on filed comments — on its petition by the January 7, 2014, deadline, “dealing specifically with the arguments of substance contained in opposing comments.”

The ARRL’s comments to the FCC echo the points it made in a [briefing memorandum](#) made public in mid-December. The memo attempted to clarify just what it is — and is *not* — asking the FCC to do. The League said some comments filed in opposition to its petition “are premised on certain recurring misconceptions or errors” that, the ARRL allowed, were “understandable” given that the rules governing Amateur Radio MF and HF emissions “are not entirely straightforward or intuitive.”

In general, the ARRL said, the petition would have no effect on HF subbands where phone and image emissions are now allowed. “The petition would not permit digital voice transmissions in the data and RTTY subbands, because digital voice is defined in the Commission’s rules as voice (ie, phone), *not* data,” the ARRL stressed in its comments. The petition would have no effect on CW operation in the HF bands either, and restrictions on automatically controlled digital stations would remain unchanged as well.

“It is hoped that those who have filed comments in this proceeding or who anticipate doing so will review the above summary of what the *Petition* in this proceeding does and does not propose, and that they will find it helpful in evaluating the proposal for themselves, unhindered by any misconceptions about the existing rules or the proposed changes,” the ARRL said in its comments.

The ARRL comments also took pains to address the proposed 2.8 kHz maximum bandwidth for HF data emissions. “Some comments say that bandwidths greater than 2.8 kilohertz for data emissions should be permitted in order to permit a wider array of data emissions now and in the future,” the ARRL said. “Others argue that 2.8 kHz is too wide, potentially allowing usurpation of the band to the detriment of CW and other narrow-bandwidth emissions.”

The recommended 2.8 kHz maximum, the ARRL said, was an attempt to balance two competing objectives — facilitating the use of current and future data emissions and protecting against a situation where a few data stations take over a band.

“Some bandwidth limit is necessary, if the outdated symbol rate limit is eliminated, as it should be,” the League argued, adding that it would be “undesirable” to permit an environment where “a few data stations using large swaths of spectrum could operate to the detriment of other modes in the very narrow HF amateur allocations.” Nor would it be possible, the League said, to drop the maximum HF data emission bandwidth much below 2.8 kHz without prohibiting permitted data modes already in use.

The League’s petition now tops the FCC’s [“Most Active Proceedings”](#) list. As of the December 23 comment deadline, more than 850 comments had been filed. --ARRL

ARRL-SPONSORED MEDIUM-FREQUENCY EXPERIMENT CONTINUES AS HAMS HOPE FOR NEW BAND

The ARRL-sponsored medium-frequency experiment, operating as [WD2XSH](#), continues apace in an effort to demonstrate the viability of 472 to 479 kHz as a secondary Amateur Radio allocation. At the same time, the FCC has been silent regarding the ARRL’s November 2012 [Petition for Rulemaking](#) that asked the Commission to make this segment of the spectrum available to radio amateurs in the US. Delegates to the 2012 World Radiocommunication Conference [approved](#) a 7 kHz-wide secondary allocation between 472 and 479 kHz for the Amateur Radio Service, with a power limit of 5 W EIRP (or 1 W EIRP, depending on location). The FCC has indicated that it will address the issue within the context of its *Notice of Proposed Rule Making* in [ET Docket No. 12-338](#), to formally reflect the *Final Acts* of WRC 2007 in its rules. In his quarterly WD2XSH update, Experiment Coordinator Fritz Raab, W1FR, reported that 514 contacts — 10 in the last quarter — have been logged among those taking part in the experiment across the US.

“As usual, activity increased as conditions improved during the fall. Much of the recent activity has involved [WSPR-15](#),” Raab reported. “Reception over significant distances (eg, Europe, Alaska) has been reported. Much of the activity is being undertaken by a few new experimental licensees.” Raab noted that WD2XSH participant Brian Justin, WA1ZMS, transmitted Fessenden [commemorative broadcasts](#) on AM via his own experimental license, WG2XFQ, during the December holidays.

In the US, the 472-479 kHz band is part of the larger 435-495 kHz segment that is allocated on a primary basis to the Maritime Mobile Service (federal and non-federal users), and on a secondary basis for federal government aeronautical radionavigation. The ARRL stated in its *Petition* that it is unaware of any domestic assignments that might conflict with the allocation of 472 to 479 kHz to the Amateur Radio Service, and there is almost no power line carrier (PLC) operation in this band segment. The FCC in 2003 cited the potential for interference to utility-operated PLC systems when it turned down an ARRL petition seeking an LF “sliver band” at 135.7 to 137.8 kHz.

The WD2XSH experiment involves more than three dozen stations and includes all geographic areas of the US, including Alaska and Hawaii. Most of the stations are in the eastern half of the US. Raab has reported no interference issues during the WD2XSH experiment, begun in 2006 and initially using spectrum in the vicinity of 500 kHz. The experiment is scheduled to continue until the current license expires on August 1, 2015. Seventeen US experimental stations not affiliated with the ARRL experiment and a handful of Part 15 stations are active in the vicinity of 500 kHz. A dozen so-called “heritage stations” in the US operate there as well.

As Raab noted in his report, at least a dozen countries already have approved Amateur Radio operation in the 630 meter band — 472 to 479 kHz. They are Germany, Greece, Malta, Monaco, Norway, the Philippines, Czech Republic, New Zealand, Australia, Switzerland, Finland, Spain, and France. --ARRL

FUNCUBE-1 (AO-73) MARKS 6 WEEKS IN SPACE

The FUNCube-1 ([AO-73](#)) spacecraft has now been in orbit and fully operational for about 6 weeks. A Russian Dnepr rocket carried the AMSAT-UK cubesat and 18 other satellites into orbit on November 21. The FUNCube-1 team has expressed its gratitude to all radio amateurs who have uploaded telemetry data to the satellite's "[data warehouse](#)." The telemetry downlink frequency is 145.935 MHz (BPSK). The team's Dave Johnson, [G4DPZ](#), reported that he has been refining the warehouse operation and promises more features soon, along with updates to the "dashboard" software. [Version 814](#) of the dashboard software is available for download.

"We intend to keep the present operating schedule in place for the time being, whilst various onboard parameters continue to be characterized by the team," the FUNCube-1 team said. "The present low internal temperatures being experienced by the spacecraft, at least in the Northern Hemisphere, are causing some frequency shifting to take place — especially on the uplink frequencies."

Still uncertain is whether FUNCube-1 is "Object 2013-066AE" for tracking purposes, but, the team, said that object appears to be "the most likely candidate." The latest Keplerian [element data](#) that seem to be the best fit for now are from NORAD/Celestrak, which refers to "DNEPR OBJECT AE." The FUNCube-1 website has posted updated the two-line element ([TLE](#)) information.

AO-73 carries an inverting SSB/CW transponder, with an uplink passband at 435.150 to 435.130 MHz LSB, and a downlink passband at 145.950 to 145.970 MHz USB. The AO-73 team requests that users run no more than 5 W to a 7 dBi gain antenna. When it's in sunlight, the satellite's beacon runs 300 mW. In eclipse it runs just 30 mW.

A facility to view the latest FUNCube-1 [high-resolution data](#) uploaded to the data warehouse now is available. The FUNCube-1 team plans to make the high-resolution data downloadable as .csv files, as it already does for whole orbit data (WOD).

The FUNCube-1 team has made some changes to the service that receives, processes, and stores telemetry data. "The first change is to introduce an acceptance time window for packets uploaded from the dashboard," it said. "This restricts packets to those whose sequence numbers are within ± 48 hours of the latest sequence number stored in the data warehouse."

The FUNCube-1's Johnson said it's doing this for two reasons. "We have received erroneous packets whose sequence numbers are significantly different to the latest value. To reduce the chance of double scoring of points when we release stored data back to the user community," he explained. The second change was made to improve scoring. "We currently process packets immediately as they arrive at the server," Johnson said. "Under load, this can cause us to lose a few packet scores because of contention in the database. To alleviate this problem, we are going to change the processing slightly to process packets through a buffer. This buffer will be processed every 5 seconds, so there will be a slight delay before packets are acknowledged on the ranking."

Satellite enthusiast Patrick Stoddard, [WD9EWK](#), has posted [video](#) of his AO-73 operation from Arizona on YouTube. "AO-73 hears very well, as long as you're careful to match the polarization of the satellite's antennas," he said. "High power is not necessary to be heard through the transponder." — *Thanks to AMSAT News Service, FUNCube-1, Southgate Amateur Radio News*

JANUARY OR FEBRUARY ISS DIGITAL "HAM VIDEO" COMMISSIONING POSSIBLE

The digital Amateur Radio TV (DATV) "[Ham Video](#)" project delivered to the International Space Station last summer could be up and running in a month or two. Amateur Radio on the International Space Station-Europe ([ARISS-Europe](#)) Chairman Gaston Bertels, [ON4WF](#), said in a late-December project update that the January-February 2014 time frame "seems a reasonable guess for the Ham Video commissioning." Initial plans called for commissioning the 2.4 GHz Ham Video system last October, but Bertels said ISS flight rules regarding ARISS activities, which already cover VHF and UHF, needed to be updated for S band.

"Writing flight rules and having them verified, accepted and signed by all parties involved is a process that takes time," he said. "ARISS matters have low priority among the countless activities [aboard] the International Space Station. Unforeseen events, such as the recent failing of a cooling system, evidently caused further delay." US Astronaut Mike Hopkins, [KF5LJG](#), is scheduled to handle the tasks involved with getting the S Band Ham Video DATV setup on the air from the Columbus

Laboratory, where it has been in storage.

Last September, the European Space Agency (ESA) and ARISS conducted experimental testing and simulations. Bertels says commissioning the Ham Video transmitter involves configurations using two antennas, four frequencies, and two symbol rates.

Signals transmitted during commissioning will be received by the Matera ground station in southern Italy. During the commissioning period, the Ham Video transmitter will transmit continuously for several days or even weeks, Bertels said.

“This will allow ground stations to test their equipment and to provide useful information concerning the efficiency of the transmitter.” The commissioning transmissions will be carried out with the Ham TV camera turned off, but Bertels said the “blank” transmissions will provide the necessary digital video broadcasting — satellite ([DVB-S](#)) protocol signal.

Receiving the DATV signal will be a greater challenge, Bertels [has said](#), adding that DATV decoding should be possible for a ground station equipped with a 1.2 meter dish, when the ISS is within a range of about 800 to 1000 kilometers.” This would limit the DATV reception window to about 3 or 4 minutes during a favorable pass. Once operational, the Ham Video transmitter will be used for ARISS educational contacts with schools in Europe. There are no immediate plans to deploy downlink video for ARISS contacts with US schools, in part because no North American ground stations have been planned.

ARISS-EU says a “simple station” might consist of a [helix-fed parabola dish](#), a low-noise downconverter (such as a High Sierra Microwave [Model 2400](#) or Kuhne Electronic [KU LNC 23 TM](#), or [AliExpress HD LNBF](#)), a DVB-S receiver on a computer card (such as the [Techno Trend S2-1600](#)), and the free [Tutioune](#) software developed by Jean Pierre Courjaud, F6DZP.

With this setup, Ham Video from the ISS can be received, decoded and viewed on a computer display. The *Tutioune* software graphically displays received signal characteristics and can save data to a file for forwarding to ARISS for analysis. — [ARISS-Europe Chair Gaston Bertels, ON4WF](#)

VOICE OF RUSSIA, FORMER "RADIO MOSCOW," ENDS SHORTWAVE BROADCASTS

Voice of Russia ([VOR](#)), the former Radio Moscow during the USSR era, ceased shortwave broadcasts as of January 1, 2014. From the 1950s through the 1980s, the station, as Radio Moscow, was a virtual beacon for short-wave listeners, many of whom gravitated into Amateur Radio. Voice of Russia currently broadcasted to 160 countries in 38 languages for an aggregate 151 hours per day on short and medium waves, on FM, via satellite, and via the Internet. Earlier this year shortwave transmissions were cut to 26 hours a day in all languages, down from more than 50 hours a day in 2012.

VOR, which claims to be the first radio station to broadcast internationally, will continue to broadcast online and via three medium-wave transmitters. In 2003 VOR was among the first major international radio broadcasters to launch daily broadcasts to Europe in Digital Radio Mondiale ([DRM](#)).

As a result of a decree signed earlier this month by Russian President Vladimir Putin, the Voice of Russia radio company officially ceased to exist on December 9 and merged with several other state-run news agencies as part of *Rossia Segodnya*, a Russia-based international news service. Putin's decree also abolished the State Fund of Television and Radio Programs, placing it under control of All-Russia State Television and Radio Broadcasting Company. --ARRL Letter

THE SUN HAS UNDERGONE A “COMPLETE FIELD REVERSAL,” WITH ITS NORTH AND SOUTH POLES CHANGING PLACES

“A reversal of the sun’s magnetic field is, literally, a big event,” NASA’s Dr. Tony Phillips said in a statement issued on the space agency’s website. “The sun’s polar magnetic fields weaken, go to zero and then emerge again with the opposite polarity. This is a regular part of the solar cycle,” Stanford solar physicist Phil Scherrer explained.

While it may seem like the event could have catastrophic repercussions for the galaxy, its effects are actually more subtle, mostly interfering with space exploration. “Cosmic rays are a danger to astronauts and space probes, and some researchers say they might affect the cloudiness and climate

of Earth,” said Phillips.

Both the aurora borealis and its southern counterpart – the australis – are set to become broader, more frequent, and more visible now that the event has reached its final stage. The sun has “flipped upside down”, with its north and south poles reversed to reach the midpoint of Solar Cycle 24, Nasa has said.

Now, the magnetic fields will once again started moving in opposite directions to begin the completion of the 22 year long process which will culminate in the poles switching once again.

“A reversal of the sun’s magnetic field is, literally, a big event,” said Nasa’s Dr. Tony Phillips. “The domain of the sun’s magnetic influence (also known as the ‘heliosphere’) extends billions of kilometers beyond Pluto. Changes to the field’s polarity ripple all the way out to the Voyager probes, on the doorstep of interstellar space.”

Read more at <http://www.wnd.com/2013/12/sun-has-f...qeM01Eg5czw.99>

SHORTS

ERRATA: IN THE “FIRST WARTIME USE OF RADAR” In the December issue of our Newsletter, there is an error as to the location of the RCA Labs before 1942. The RCA labs were located in Camden, NJ when the SCR-268 and SCR-270, SCR-271 receivers were developed. --QRZ News

NEW TECHNICIAN CLASS QUESTION POOL RELEASED – The [NCVEC](#) Question Pool Committee has released the new 2014-2018 Technician Class, Element 2, [question pool](#) to the public. This pool will take effect on July 1, 2014, and will remain valid until June 30, 2018. The [current Technician question pool](#), released in 2010, is valid until June 30, 2014. -- *Maria Somma, AB1FM, ARRL/VEC Manager*

INTERESTING ARTICLES:

For tips on how to get spotted more easily by the [Reverse Beacon Network](#), see some of the presentations linked from Bob N6TV's page on [QRZ.com](#). Similarly, this can also help you *avoid* getting spotted if that suits your strategy a bit better.

Electronic Design magazine has interesting technical articles that address both the latest wireless technology and the earliest.

- [Understanding Error Vector Magnitude](#) - 7 Nov 2013 issue
- [John Renshaw Carson: Modulation's Earliest Innovator](#) - 5 Dec 2013 issue (inventor of SSB and Carson's Rule for FM bandwidth)
- [Envelope Tracking Technology Boosts RF PA Linearity and Efficiency](#) 11 Nov 2013 issue

IEEE Spectrum, “[Engineering will never outgrow hobbyists](#)” – Many older engineers first became interested in electronics through hobbies in their youth – assembling kits, participating in amateur radio, or engaging in other experiments. The 1970s and 1980s were great times for electronics hobbyists. [Heathkits were hot items](#), often newer and of better quality than commercial equivalents. What kit is the guy in the picture building?



Photo: Terry Perdue, IEEE Spectrum

SPANISH RADIO AMATEURS GIVEN ACCESS TO 60 METER FREQUENCIES THROUGH JUNE – Unión de Radioaficionados Españoles ([URE](#)) General Secretary Salvador Bernal, EA7SB, [reports](#) that Spain’s telecommunications regulatory agency has authorized the use of several frequencies in the 5 MHz (60 meter) band from January 1 through June 30, 2014. The six authorized center frequencies are 5268, 5295, 5313, 5382, 5430, and 5439 kHz, with a power of 100 W PEP and a maximum bandwidth of 3 kHz.

Center channels authorized for US radio amateurs differ. They are 5332, 5335.5, 5348, 5373, and

5405 kHz.

The URE said that while the authorization does not specify which sideband amateurs should use, URE is recommending that hams in Spain use USB on 60 meters, the mode most countries authorizing operation on 60 meters use. Hams in Spain may also operate on CW on 60 meters. --ARRL

VK8NSB OFFERS 10 METER SSTV BEACON AWARD – According to VK8NSB his Slow Scan TV Repeater on 28.700 Mhz transmits a beacon picture every 60 minutes and there are 12 pictures in total. VK8NSB says that he is now offering those that receive all 12 pictures in full a special award. Once you have received all 12 pictures please e-mail Stuart to vk8nsb (at) hotmail (dot) com. Include all 12 pictures in JPG format and VK8NSB will send you the award via return e-mail. More information can be obtained on the VK8SNB web page on QRZ.COM. (WIA News)

TOKYO HY-POWER APPEARS OUT OF BUSINESS – RF amplifier manufacturer Tokyo Hy-Power formally known as the Tokyo High Power Research Institute has filed for bankruptcy. No reason was given for the sudden demise of Tokyo Hy-Power. The story is on the ARRL news pages at www.arrl.org. (HRO, ARRL, others)

INNOVANTENNAS ACQUIRES FORCE 12 – United Kingdom based InnovAntennas has acquired the Force 12 Antenna Company and product line and has moved the Force 12 production from Texas, to Grand Junction, Colorado. This is a facility to be shared with InnovAntennas America.

InnovAntennas says it plans to produce updated versions of classic Force 12 antennas as well as all-new models. Meantime InnovAntennas in the United Kingdom is now manufacturing Force 12 products for the European market at its Canvey Island plant. (InnovAntennas via Southgate)

THE OLD RCA – THOMSON FACILITY ON SHERMAN DRIVE IS BEING TORN DOWN. Click on the links below image to see the full size photo. Thanks K9RU!



<https://dl.dropboxusercontent.com/u/3824764/DSC02663.JPG>



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