THE PLATTSMOUTH AMATEUR RADIO CLUB
Communicator
June 2018

Amateur Radio Transponders on Planned Chinese Satellites to Include HF

(ARRL 05/23/2018) China's Amateur Radio Satellite organization, CAMSAT, has released some details of three new Amateur Radio satellites that could be launched as early as September. Two of the satellites, CAS-5A and CAS-6, will carry transponders, and one of them will have HF capability.

CAS-5A is a 6U CubeSat. It will an HF/HF (21/29 MHz) mode linear transponder; an HF/UHF (21/435 MHz) mode linear transponder; an HF CW telemetry beacon; VHF/UHF mode linear transponder; a VHF/UHF mode FM transponder; a UHF CW telemetry beacon, and UHF AX.25 4,000/9,600-baud GMSK Telemetry. Transponders will have 30 kHz passbands, except for the H/U unit, which will be 15 kHz.

The tiny CAS-5B, weighing 1/2 kilogram, will be deployed from CAS-5A in orbit. It will carry a UHF CW beacon on an Amateur Radio frequency. It will be placed into a 539 × 533 kilometer, 97.5° orbit.

CAS-5A/B will launch from the Jiuquan Satellite Launch Center.

CAS-6, a 50-kilogram microsat, will include a VHF CW telemetry beacon; a U/V mode 20 kHz linear transponder, and AX.25 4,800-baud GMSK telemetry downlink. It will also carry an atmospheric wind detector and other systems that will operate on non-amateur frequencies.

A launch at sea is planned for CAS-6 from the China Academy of Launch Vehicle Technology. The microsat will be placed into a 579 × 579 kilometer, 45° orbit.

CAMSAT has applied to the International Amateur Radio Union (IARU) to coordinate frequencies for all three spacecraft. — Thanks to AMSAT News Service via AMSAT-UK

http://www.arrl.org/news/amateur-radio-transponders-on-planned-chinese-satellites-to-include-hf

Solar Eclipse QSO Party Research Results Published

(ARRL 05/17/2018) The first science results from the Solar Eclipse QSO Party (SEQP) last August 21 have been published in the American Geophysical Union journal Geophysical Research Letters. In the paper, "Modeling Amateur Radio Soundings of the Ionospheric Response to the 2017 Great American Eclipse," Nathaniel Frissell, W2NAF, and team present Reverse Beacon Network (RBN) observations of the SEQP and compare them with ray tracings through an eclipsed version of the physics-based ionospheric model SAMI3. Frissell, a New Jersey Institute of Technology (NJIT) research professor, explains that ray tracing is a method of calculating where a radio wave will go based on electron density — essentially the same as calculating how a light ray through a lens. HamSCI, the Ham Radio Science Citizen Investigation organization, sponsored the event.

"From a ham radio perspective, this paper very clearly shows the effect of the eclipse on not just a few, but a very large number of contacts," Frissell told ARRL. "You can see from the charts that activity drops off steeply on 20 meters during eclipse totality, while 80 and 160 meters open up. On 40 meters, you can see how the contact distance increases in step with the eclipse."

Frissell said another key aspect of the paper is that the researchers were able to use ray tracing to compare the observations to a physics-based numerical model of the eclipsed ionosphere. "We did this by ray tracing hundreds of thousands of ray paths on the NJIT supercomputer," Frissell explained. "The development of this method of comparison also gives us a new tool for comparing datasets like the RBN to actual models."

On 14 MHz (20 meters), eclipse effects were observed as a drop off in communications for an hour before and an hour after eclipse maximum. On 7 MHz (40 meters), typical path lengths extended from about 500 kilometers (310 miles) to 1,000 kilometers (620 miles) for 45 minutes before and after eclipse maximum. On 1.8 MHz

(Continued on Page 3)

2018 PAID MEMBERSHIP

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KA0IJY ..... Keith Keene [E]
KBØFSI .....Pat McCollum [T]
KBØLF .....Fred Ericksen [E]
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KBØZZT..... George Bellairs [T]
KCØDTK..... Joan Bellairs [T]
KCØHYD.....John Titsworth [G]
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KEØXQ..... Bill McCollum [E]
KIØPY .....Kevin Faris [E]
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WØZYD.... Debbie McLaughlin[G]
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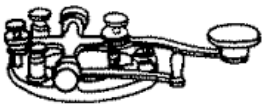
**Charter Members #New Ham*

Note: Thanks to all who have paid their dues and many who have given additional donations. All donations are greatly appreciated. Please let me know of any corrections.



Meetings are 8am the last Saturday of most months at Mom's Café in Plattsmouth.

Tuesday night get-togethers at Plattsmouth Burger King at 7 PM

PLATTSMOUTH AMATEUR RADIO CLUB

KBØSMX

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Repeaters:

443.45+ is located in downtown Omaha
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Web Site
www.kb0smx.com
Maintained by Derek (W0DBW)

MINUTES of the MEETING

The minutes of the April meeting were not available at press time.

Meeting Calendar
8am, May 26, 2018 at Mom's Café
Field Day June 23-24
Meeting at Noon, 6/23
8am, July 28, 2018

Field Day 2018 is June 23-24

http://www.arrl.org/field-day

PLATTSMOUTH ARC MEMBERSHIP REGISTRATION FORM

Name		Call Sign	Class
Address	City	State	Zip
E-Mail		Phone #	
Spouse Name		Call Sign	Class

Membership Type ☐ Primary($15) ☐ Spouse ($5) ☐ Student ($5) ☐ New Ham	● Additional donations are gratefully accepted. ● New Hams are free during the year they receive their first license. ● Please give this form and dues to the club treasurer or any club officer.	Donation for: ☐ Repeater fund ☐ Insurance ☐ Other _____ ☐ General	Amount: ☐ I prefer my donation to be anonymous.
Any additional e-mail or cell phone #s?			

Post-Launch Signals Received as Amateur Radio Heads to Moon

(ARRL 05/21/2018) China has launched two microsatellites into a lunar transfer orbit. They launched as secondary payloads with the Quequiao relay satellite on May 20, in conjunction with the Chang'e 4 mission to the far side of the moon. Once in lunar orbit, DSLWP-A1 and DSLWP-A2 (DSLWP = Discovering the Sky at Longest Wavelengths Pathfinder) — also known as Longjiang-1 and Longjiang-2 — will test low-frequency radio astronomy and space-based interferometry. They carry Amateur Radio and educational payloads, but not a transponder. The Chang'e 4 mission will be the first-ever attempt at a soft landing on the far side of the moon.

Following deployment, signals from the DSLWP satellites were received by radio amateurs in Brazil, Chile, and the US, as well as by many others around the world. Harbin Institute of Technology (BY2HIT) developed and built the DSLWP spacecraft and is overseeing that mission. The two microsats eventually will enter a 300 × 9,000 kilometer elliptical orbit. Each satellite carries VHF/UHF SDR transceivers for beacon, telemetry, telecommand, and digital image downlink, plus a GMSK-JT4 repeater. Onboard transmitting power is about 2 W.

The astronomy objectives of the two spacecraft are to observe the sky at the lower end of the electromagnetic spectrum — 1 MHz to 30 MHz — with the aim of learning about energetic phenomena from galactic sources, using the moon to shield them from earthbound radio signals.

An open telecommand protocol on the spacecraft is designed to allow radio amateurs to send commands to take and download images. DSLWP-A1 downlinks are 435.425 MHz and 436.425 MHz; DSLWP-A2 downlinks are 435.400 MHz and 436.400 MHz. They will use 250/500 bps GMSK using 10 kHz wide FM single-channel data, with concatenated codes or JT4G. JT4 uses four-tone FSK, with a keying rate of 4.375 baud; the JT4G sub-mode uses 315 Hz tone spacing and 1,260 Hz total bandwidth.

The Queqiao communications relay satellite is required for the lunar far-side landing to facilitate communication with a not-yet-launched lander and rover because the moon's far side never faces Earth, and some significant scientific measurements from the dark side of the moon require real-time contact with Earth. Queqiao was developed by the China Academy of Space Technology (CAST).

Harbin Institute of Technology Amateur Radio Club hopes that radio amateurs will get involved with the DSLWP mission, and QSL cards have been designed for different flight phases for amateurs who successfully receive telemetry or make contact.

http://www.arrl.org/news/post-launch-signals-received-as-amateur-radio-heads-to-moon

Eclipse *(Continued from Page 1)*

(160 meters) and 3.5 MHz (80 meters), eclipse effects were observed as band openings 20 to 45 minutes around eclipse maximum.

By using ray tracing to compare these observations with the SAMI3 model, it was found that the majority of 14 MHz signals refracted off the ionosphere at heights less than 125 kilometers (77.5 miles) in the E region. On the lower bands, 1.8, 3.5, and 7 MHz, it was found that signals likely refracted off heights greater than 125 kilometers (77.5 miles) in the F region.

These observations suggest an eclipse-induced weakening of the ionosphere, and are consistent with numerous prior HF radio eclipse ionospheric studies.

The SEQP generated more than 618,000 RBN spots, 630,000 Weak Signal Propagation Reporter Network (WSPRNet) spots, 1.2 million PSK Reporter spots, and 29,000 log contacts.

The SEQP research paper, along with the geo-located RBN data with solar eclipse obscuration values used in the paper, are being published under an open-access license to allow for further research. The data files can be found under the "Supporting Information" section of the paper. Additional HamSCI eclipse data is available online.

http://www.arrl.org/news/solar-eclipse-qso-party-research-results-published-in-geophysical-research-letters

http://hamsci.org/seqp

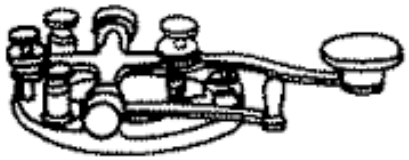
Information from Dudley:

Omaha DStar Repeaters

The Omaha DStar repeaters have been restored to service. The 145.175 repeater is usually nailed up to the Reflector 001C so that loads of international QSO can be had.

The 442.125 repeater is available for most anything except for nets that are automatically set up. Every Sunday evening at 7pm the International DStar Net is connected.

For those that want to help get the system up and reliably operating we have a net on Thursday nights at 9pm for as long as is necessary to execute project needed to improve the systems. The net is on 442.125.



FT8 Activity Bumping Up at Some Expense to Other Modes

(ARRL 05/17/2018) Despite largely dismal HF conditions, there is no doubt that the recent FT8 digital protocol has made hams more enthusiastic about getting on the air. The mode has caught on so quickly that co-developer Joe Taylor expressed surprise last fall at the rapid uptake of FT8 for making contacts on HF bands. Judging by Logbook of The World (LoTW) data, more than 2.3 million FT8 contacts were uploaded in 1 month — a net gain of 1.2 million contacts on all modes over the same month last year, ARRL Radiosport Manager Norm Fusaro, W3IZ, said. Over the same period, activity in some of the other modes has declined.

"Year-to-date DXCC applications are up by 11% over the same period last year," Fusaro said. "So far, we have processed 898 Worked All States (WAS) applications — a 72% increase over the same period last year. Of those applications 347 — or 39% — were FT8 endorsements. Application for VUCC are also up by 33% over 2017."

Fusaro said that while some feel that FT8 is "taking over the world," subsuming all other modes, that's not the case. "Activity in the traditional modes of SSB and CW has decreased only slightly, by 10%," he said. "The real decrease is in RTTY and PSK activity and in the other WSJT-X modes. I believe poor propagation would have cut into SSB and CW activity, regardless of the new mode." Anecdotal reports support Fusaro's hard numbers, with wall-to-wall signals surrounding the FT8 watering holes.

Late last year, Denny Berg, WB9MSM, achieved his goal of completing DXCC using FT8. It took him just 4 months.

"I can tell all of you that this mode is spreading like wildfire throughout all the HF bands," Berg told The Daily DX at the time. He said he was able to work all states on FT8 in about 6 weeks of operating.

Taylor has characterized SSB and CW as "general-purpose modes" that are good for ragchewing, DXing, contesting, disaster communication, and other purposes. On the other hand, he has said, FT8 and the other protocols in the WSJT-X suite are "special-purpose modes," designed for making reliable, error-free contacts using signals that may be too weak to work using more traditional modes — and sometimes even too far down in the noise even to hear.

http://www.arrl.org/news/ft8-activity-bumping-up-at-some-expense-to-other-modes

https://physics.princeton.edu/pulsar/k1jt/wsjtx.html

ARRL Provides Context for Recommended Governance Changes

(ARRL 05/23/2018) ARRL has released a "white paper" that provides some context to explain proposed alterations to the Articles Of Association and By Laws that the Executive Committee (EC) of the Board of Directors recommended for full Board passage at its April 21 meeting. Study continues of the so-called "Code of Conduct" for Board members, known officially as the ARRL Policy on Board Governance and Conduct of Members of the Board of Directors and Vice Directors, with changes to be recommended for later Board consideration.

At its January meeting, the Board pledged to provide the membership with the rationale and purpose behind proposed changes to the Articles and By Laws that it had adopted last July. In April the EC recommended minor revisions to two new amendments to ARRL's Articles of Association and one change to its By-Laws for Board approval at its July 2018 meeting. In all, four changes are being proposed.

One proposed change involves the wording of the Articles that address indemnification and personal liability of ARRL Directors, Vice Directors, and officers. Although the Board had adopted new Articles 15 and 16 at its July 2017 meeting, ARRL's Connecticut counsel recommended two revisions, requiring Board approval, to make the wording of those changed sections consistent with Connecticut state statutes.

Article 15 addresses personal liability of Directors, Vice Directors, and volunteer and staff officers for damages due to a 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 provide indemnification of Directors, Vice Directors, and volunteer and staff officers for any monetary judgement based on any actions taken or any failure to take action, except under the circumstances listed in Article 15.

A change to the wording of Article 1 would add "ARRL, the national association for Amateur Radio" as an informal name for the organization, in addition to "American Radio Relay League, Inc." This adds the informal name of the organization to the formal name spelled out in Article 1 to indicate that either rendering is a proper description of the organization.

A clarification of the Directors/Vice Directors election cycle spelled out in By Law 23 also was required. This involved only a wording change to include the correct years involved.

The minutes of the April 21 ARRL Executive Committee meeting include the specific wording of the proposed changes.

The Board made two specific edits to the "Code of Conduct" at its January meeting and directed the EC to review the remaining provisions with the intention of presenting those to the full Board. The EC began this process at its April meeting, considering a simplified version of a document recommended by the National Council of Nonprofits but realized it would take longer than anticipated to complete this review and present its findings to the Board and the membership. The EC expects to have a discussion and a proposal for the Board's consideration later this year.

http://www.arrl.org/news/arrl-white-paper-provides-context-for-recommended-governance-changes