

THE PLATTSMOUTH AMATEUR RADIO CLUB

Communicator

December 2017 - January 2018

Tiny VLF Signal Makes the Hop from Newfoundland to the UK

(ARRL 10/27/2017) For Joe Craig, VO1NA, in Torbay, Newfoundland, things have been pretty exciting lately on VLF (very low frequency). He's among the early MF, LF, and VLF experimenters in North America — active even before Canada allocated Amateur Radio bands in that part of the spectrum. He believes he accomplished a “first” for a Canadian radio amateur on October 22, when his very VLF, very QRP signal on 8.27 kHz (that would be the 36-kilometer band) was copied in the UK.

“After much effort on both sides of the pond, SWL Paul Nicholson in Todmorden finally copied a three-letter message,” he told ARRL. “It's the lowest-frequency transatlantic message, made possible because of Paul's EbNaut coherent BPSK mode and DL4YHF's Spectrum Lab spectrum analyzer.” Even more amazing: The power was 10 μ W ERP. Craig is permitted to run 10 mW by regulator ISED Canada (formerly Industry Canada). The transmission path was more than 3,500 kilometers (approximately 2,170 miles).

(Continued on Page 3)

Simple 40-Meter Dipole Supports Advanced Mars Radar

(ARRL 11/10/2017) The venerable HF dipole has found a new home and purpose in space. The Mars advanced radar for subsurface and ionospheric sounding (MARSIS) on Mars Express uses a simple 40-meter dipole as the antenna for its subsurface sounding radar.

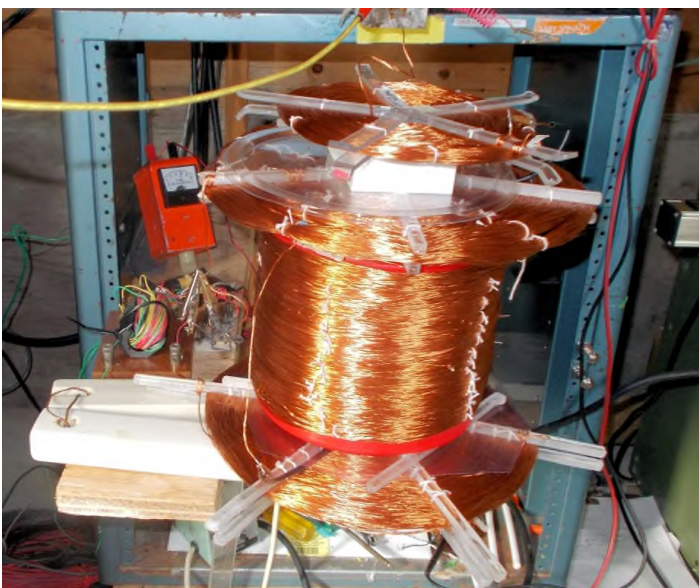
The dual-channel low-frequency sounder operates between 1.3 and 5.5 MHz for subsurface sounding and between 100 kHz and 5.5 MHz for ionospheric sounding. It's the first high-frequency sounding radar operating from orbital altitudes since the Apollo 17 lunar sounder in 1972. It's been operating successfully since August 2005.

The sounder has obtained returns from several kilometers below the Mars surface.

MARSIS (Mars Advanced Radar for Subsurface and Ionosphere Sounding) is a low frequency, nadir-looking pulse limited radar sounder and altimeter with ground penetration capabilities, which uses synthetic aperture techniques and a secondary receiving antenna to isolate subsurface reflections.

The operation altitudes for MARSIS are up to 800 km above the Martian surface for subsurface sounding and up to 1200 km for ionospheric sounding. In its standard operating mode, the instrument is capable of making measurements in 1 MHz wide bands centred at 1.8, 3.0, 4.0 and 5.0 MHz.

(Continued on Page 3)



The Massive loading coil at VO1NA

Meeting Calendar

8am, November 24, 2017

at Mom's Café

No Meeting in December

Dinner on Sunday, Jan. 28, 2018

5pm at Famous Dave's

**2017
PAID MEMBERSHIP**

- AGØL.....Steve Loyd [E]
- AIØN.....Chuck Engberg* [E]
- K3CRFDave Smith [E]
- K5LBS.....Jerry Gault [E]
- KA0IJY Keith Keene [E]
- KBØFSIPat McCollum [T]
- KBØOGO Roger Behrns* [E]
- KBØZZT..... George Bellairs [T]
- KCØDTK..... Joan Bellairs [T]
- KCØHYD.....John Titsworth [G]
- KCØHYE.....Shirley Titsworth [T]
- KDØNMD.....Dudley Allen [G]
- KEØBXB Kim Allen [T]
- KEØXQ..... Bill McCollum [E]
- KGØKR Beth Engberg* [E]
- KIØPYKevin Faris [E]
- N5SEZ Ray McNally[E]
- NØLZHJohn Harrington[T]
- WØDBW.....Derek Winterstien [G]
- WØZYDave McLaughlin[E]
- WØZYD Debbie McLaughlin[G]

**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



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443.45⁺ is located in downtown Omaha
 443.225⁺ is located in Murray.
 147.48 Simplex is also in Murray.

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**MINUTES of
the
MEETING**

The October 28, 2017 meeting was held at Mom's Café in Plattsmouth. The meeting was called to order at 0821 by President Roger Behrns

Those in attendance were Roger (KBØOGO), Kevin (KIØPY), Ray (N5SEZ), Fred (KBØLF), Derek (W0DBW), Keith (KA0IJY), Bill (W3DCQ), Dudley (KDØNMD), and Gary (WDØCFC).

The Minutes of the September meeting were approved on a motion by Dudley and second by Gary.

The treasurer no changes this month which leaves \$260 in the repeater fund and \$705.35 in the general fund for a balance of \$965.35.

Dudley gave an update on scouting activity. The Girl Scouts have a "Thinking Day on the Air" the third weekend in February and he is working on possible activity with them. The Boy Scout Jubilee will be held in October 2018 and will be the week after JOTA.

Fred updated the group on the Nebraska 150 events and the NE150hams website.

The meeting adjourned on a motion by Kevin and second by Fred at 0842.

Everyone is invited to the Annual Dinner. You do not have to be a member or even be a ham. Bring a friend who is interested. Sunday January 28, 2018 5 pm at the party room at Famous Dave's Order off the menu. It's a great chance to visit friends or make new ones.

PLATTSMOUTH ARC MEMBERSHIP REGISTRATION FORM

Name		Call Sign		Class	
Address		City		State	
E-Mail		Phone #			
Spouse Name		Call Sign		Class	
Membership Type <input type="checkbox"/> Primary(\$15) <input type="checkbox"/> Spouse (\$5) <input type="checkbox"/> Student (\$5) <input type="checkbox"/> 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: <input type="checkbox"/> Repeater fund <input type="checkbox"/> Insurance <input type="checkbox"/> Other _____ <input type="checkbox"/> General	
Any additional e-mail or cell phone #s?		Amount: <input type="checkbox"/> I prefer my donation to be anonymous.			

VLF (Continued from Page 1)

VLF signals have been copied across the Atlantic in the past. In March 2014, a very slow-speed (QRSS) CW signal on 29.499 kHz, transmitted by Bob Raide, W2ZM, a New York Experimental licensee, initially was detected in the UK by Nicholson. In June 2014, Dex McIntyre, W4DEX, in North Carolina, transmitted an EbNaut signal on 8.971 kHz, while running on the order of 150 μ W effective radiated power. Nicholson detected that signal too. McIntyre needed no FCC license to transmit on 8.971 kHz, because the Commission has not designated any allocations below 9 kHz, dubbed “the Dreamers’ Band.”

Craig’s transmission from Newfoundland began at 2300 UTC on October 22 and ended 7 hours later. “Paul replied by e-mail the following day with the correct message,” Craig said, “and there was much rejoicing across the pond and in the Marconi Radio Club of Newfoundland!”

Craig said that Nicholson had detected a carrier from VO1NA this past spring, but it was not stable enough to send a message.

DL4YHF’s Spectrum Lab, with a GPS module output signal used to calibrate the computer and help from DF6NM and DK7FC, worked much better, Craig said. “Paul measured the phase for a few days before the message was sent. With the new high-stability carrier, Paul got me on the first call.”

The final stage of his VLF transmitter is what Craig described as “the very Canadian Traynor Group One/SC stage amplifier” from the 1970s. He says his is “the only known VLF transmitter in Newfoundland and Labrador.” His antenna, by the way, is approximately 100 meters (approximately 328 feet) of #12 copper wire, about 12 meters high on average.

<http://www.arrl.org/news/tiny-lf-signal-makes-the-hop-from-newfoundland-to-the-uk>

<http://www.ucs.mun.ca/~jcraig/vlf.html>

<http://abelian.org/ebnaut/>

<http://www.qsl.net/dl4yh/spectral1.html>



Revised Frequency Band Charts which now include the new low frequency bands are now available for free download at: <http://www.arrl.org/graphical-frequency-allocations>
Charts are available in two sizes and black and white or color.

Mars (Continued from Page 1)

MARSIS functions by transmitting a linear frequency modulated chirp using a nadir-looking dipole antenna. The return signal is received on both the dipole antenna and a secondary monopole antenna oriented along the nadir axis. The secondary antenna has a null in the nadir direction and receives primarily the off-nadir surface reflections. This signal can be subtracted from the main received signal during ground processing to reduce surface clutter. Both received signals are down converted to range offset video signals before being passed to an analogue to digital converter. The resultant data are formatted by the MARSIS on-board digital processor and passed to the spacecraft for transmission to Earth.

Follow the ESA link below for more information.

<http://www.arrl.org/news/simple-40-meter-dipole-supports-advanced-mars-radar>

<http://sci.esa.int/mars-express/34826-design/?fbodylongid=1601>

AO-91 Commissioned, Declared Open for Amateur Use!

(ARRL 11/23/2017) AMSAT-NA’s latest Amateur Radio CubeSat, RadFxSat (Fox-1B), now known as AO-91, has been opened for general use. AMSAT Engineering officially announced that AO-91 was ready for use at 0650 UTC on Thanksgiving Day, November 23. AMSAT VP of Engineering, Jerry Buxton, N0JY, turned over operation to Mark Hammond, N8MH, and AMSAT Operations during a contact on the AO-91 repeater during the pass over the Eastern US, AMSAT said in a bulletin.

The latest CubeSat in the Fox series was launched on November 18 from Vandenberg Air Force Base in California. Telemetry is downlinked via the DUV sub-audible telemetry stream, which can be decoded using FoxTelemsoftware. A 1U CubeSat, RadFxSat (Fox-1B) is a joint mission of AMSAT and the Institute for Space and Defense Electronics (ISDE) at Vanderbilt University. AMSAT constructed the rest of the satellite, including the spaceframe, on-board computer, and power system.

The Amateur Radio package is similar to that on AO-85, with an uplink on 435.250 MHz (67.0 Hz CTCSS) and a downlink on 145.960 MHz.

<http://www.arrl.org/news/ao-91-commissioned-declared-open-for-amateur-use>