Ham RADIO News

Newsletter of the Amateur Radio Society of India (Indian Affiliate of IARU)
July 2014 Issue

Presidents Message

A very successful Field day was initiated by ARSI as part of their objectives of getting radio amateurs out of their homes and practice setting up temporary stations and to communicate with similar stations and other regular stations.

ARSI has mooted the idea of having a IARU Region 3 Field Day on one particular day throughout the region. The IARU directors discussed this at their recent meeting in Australia and the idea was well received. However with the diverse climatic conditions that occur within the region, it was thought that one single day may be difficult-i.e. when it is blazing hot in India it is freezing cold in Australia and New Zealand. It was decided that the World Amateur Day would be targeted for this activity next year to see how the response is.

Similar Field days are held in other IARU regions but their societies are mainly within one geographical area.

ARSI continues to work with WPC to stream-line the licensing process. A meeting was held with them in March when we made our sub-missions again. With a change in guard at the center, it is possible that a fresh approach may have to be made as there is bound to be a change in officers handling different port-folios. License renewals are

now much faster but there is still much to be done about new licenses.

We would welcome suggestions from our members on what needs to be done to increase the level of activity throughout India- we need to activate those licensed but not on the air. Several new ideas were thrown up during an online meeting held by the ARSI Governing Council and we are working on ways to implement them.

The IARU HF contest is scheduled later this month and we hope there will be much activity from India.

We would encourage all members to visit our webpage www.arsi.info and give suggestions on what other information can be put in there for helping newcomers and old-timer's alike.

73 – Gopal Madhavan VU2GMN

From the Editors Desk

Band conditions are still poor, with sporadic openings on the popular bands. Solar Max seems to have fizzled out on us with the Sun Spots having almost vanished.

Its so nice to see more and more members are taking part in contests. The contests organized by ARSI took off fairly well, considering the poor band conditions. However, it will be a few years before the rest of the world recognizes and participates in the VU contests in numbers. On the other hand, with so many contests on every weekend, it has become very difficult to find a suitable date for the contests!!

The first ever National Field Day was successful. It would be just wonderful if there is at least one Field Day station from each State in the country!! With some serious planning, it is possible too! Let's put our mind to it. Hi

I request members to contribute articles, news of events, photos, etc. for publication in the quarterly.

73, Ganesh VU2TS

GET READY FOR FOX-1

FOX-1 is the first in a new generation of AMSAT-NA CubeSats. It is currently expected to be launched in December 2014 as part of the ELaNa XII, *[Educational Launch of Nano Satellites]* Mission.

Fox-1 carries an FM transponder with a 435.180 MHz uplink and 145.980 MHz downlink that you should be able to work using your FM dual-band HT.

It is planned to be launched into a 470 by 780 km elliptical orbit with a 64° inclination.

Since the voice portion of the satellite will operate as a cross-band FM repeater we can use the same rig and antenna that were used for AO-51 or SO-50.

Compared to the existing fleet of amateur radio FM satellites in orbit, the FOX-1 will be an "easier sat" for two reasons. The use of a two meter downlink will make the satellite approximately 6 db stronger than the usual 70 cm downlink with the same output power, and the receiver will have Automatic Frequency Control or AFC to assist in Doppler correction on the uplink. This will make it possible to access the satellite even if the uplink signal is a bit off frequency.

Because the orbit is elliptical, the size of the reception footprint will vary throughout the orbit. At apogee, its coverage will approximate that of AO-51. Stations appropriately located will often be able to make intercontinental contacts, with full coverage of a continent being typical.

Fox-1, like most Low Earth Orbit satellites, will have a group of 2-3 passes lasting 5-15 minutes, each approximately 90 minutes apart, followed by another group of 2-3 passes approximately 12 hours later. Web-based satellite tracking aids will get you started to calculate when Fox-1 is in range of your station.

Fox-1 is expected to be an excellent satellite for both operations and demonstrating the adventure of amateur satellites, and will on some days be available during normal school

hours for student access to the telemetry downlink of the experiment data.

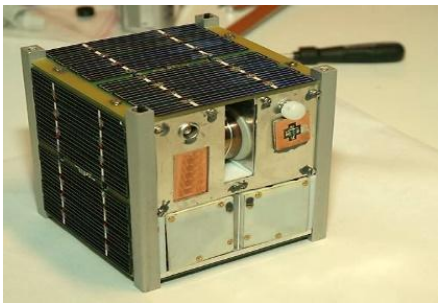
For the latest launch-schedule, see:

http://spaceflightnow.com/tracking/index.html

[A CUBESAT is a type of miniaturized satellite for space research that usually has a volume of exactly one litre (10 cm cube), has a mass of no more than 1.33 kilograms, and typically uses commercial off-the-shelf components for its electronics.

Beginning in 1999, California Polytechnic State University (Cal Poly) and Stanford University developed the CubeSat specifications to help universities worldwide in performing space science and exploration.

The CubeSat format is very popular with amateur radio satellite builders.



The design has been simplified so almost anyone can build them and the instructions are available for free online. CubeSats can be combined/stacked to make larger satellites in case you need bigger payloads. Deployable solar panels and antennas make Cubesats even more versatile. The cost to build one? Typically less than $50,000.

Over 500 Cubesats have been launched into space since they were first introduced by CalPoly and Stanford in 1999. To reduce space debris they are usually placed in very low orbits and so they fall back to earth in a few weeks or months.

Cubesats are popular with schools and universities because they are cheap and relatively easy to build. Because a lot of the hardware has been standardized, you can even buy CubeSat hardware online. They may be small, but you can do a lot with them. Including…Taking Pictures from space, Send radio communications, Perform Atmospheric Research, do Biology Experiments and use as a test platform for future technology.

Cubesats have become THE standard "microsatellite" thanks to their Open Source Hardware design and will become even more popular as we find new uses for them. If launch costs can become more affordable in the next few years…we can see a new era of personal satellites.

NASA is even offering free rides for science missions through their CubeSat Launch Initiative.] ***–VU2TS – Ed***

Listening to D-STAR with DSD 1.7

The RTL-SDR.com site has posted that D-STAR digital voice can now be decoded using DSD.1.7-software.

The post says: *Up until recently it was possible to decode D-STAR headers using either DSD 1.6 or dstar.exe and an RTL-SDR, but it was not possible to decode voice. Now amateur radio hobbyist PU2VLW has brought to our attention that the latest DSD development version 1.7 is capable of decoding the-D-STAR-audio.*

Read the RTL-SDR post at http://www.rtl-sdr.com/listening-d-star-digital-voice-dsd-1-7/

Read the PU2VLW webpage in Google English at http://tinyurl.com/DecodingDSTAR

Build a radio in less than 1 minute

Due to the numerous requests from his "Build-a-radio-in-5-minutes" radio amateur **Tommy Helgevold OZ4KID** decided to make a better video with explanations on how to make a radio-like-this.

He also decided to beat his old challenge as well...

...so without further ado, I present to you – "How to build a radio in less than 1 minute", can-you-build-it?

There's even a schematic in the end of the video + an animated version of the entire breadboard-setup.

Watch Build a radio in less than 1 minute

www.youtube.com/watch?v=3Zzmi_Kno4w

WORLD'S SMALLEST FM RADIO

New York: US researchers have used graphene to create the world's smallest FM radio transmitter - a nano-mechanical system that can create FM signals.

A team of researchers from Columbia University, led by Mechanical Engineering Professor James Hone and Electrical Engineering Professor Kenneth Shepard, took advantage of graphene's special properties - its mechanical strength and electrical conduction - and developed a nano-mechanical system that can create FM signals.

"This work is significant in that it demonstrates an application of graphene that cannot be achieved using conventional materials," Hone said.

"And it's an important first step in advancing wireless signal processing and designing ultrathin, efficient cell phones. Our devices are much smaller than any other sources of radio signals, and can be put on the same chip that's used for data processing," Hone added.

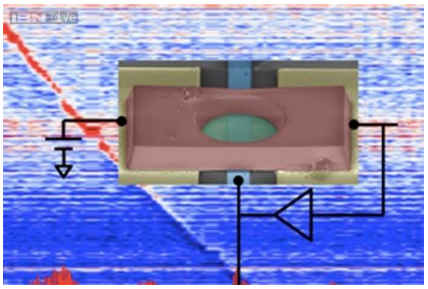
Graphene, a single atomic layer of carbon, is the strongest material known to man, and also has electrical properties superior to the silicon used to make the chips found in modern electronics.

The combination of these properties makes graphene an ideal material for nano-electromechanical systems (NEMS), which are scaled-down versions of the micro-electromechanical systems (MEMS) used widely for sensing of vibration and acceleration.

In the new study, the team took advantage of graphene's mechanical 'stretchability' to tune the output frequency of their custom oscillator, creating a nano-mechanical version of an electronic component known as a voltage controlled oscillator (VCO).

With a VCO, explained Hone, it is easy to generate a frequency-modulated (FM) signal, exactly what is used for FM radio broadcasting.

The team built a graphene NEMS whose frequency was about 100 megahertz, which lies right in the middle of the FM radio band (87.7 to 108 MHz).



They used low-frequency musical signals (both pure tones and songs from a smartphone) to modulate the 100 MHz carrier signal from the graphene, and then retrieved the musical signals again using an ordinary FM radio receiver.

"This device is by far the smallest system that can create such FM signals," said Hone.

While graphene NEMS will not be used to replace conventional radio transmitters, they have many applications in wireless signal processing, researchers said. The study is published in the journal Nature Nanotechnology.

From around the web – Ed

Fancy a trip to space but cannot afford the sky-high prices? A group at the University of Surrey may have just the thing for you. In a crowd-funded project, the team is offering wannabe astronauts a virtual trip to the stars for only £40/-

This virtual ride to space will be created by capturing footage of space via 24 high definition cameras attached to weather balloons. You'll then view the 20 KM ascent with an "Oculus Rift" virtual reality headset.

ANY OF YOU USING THE ICOM IC-7700?

IC-7700 HF/50MHz transceiver firmware update (Version 2.0), available now!

Icom Inc. has published a firmware update for the **IC-7700**. The firmware update is free to download.

The new update follows a similar upgrade made to the IC-7800 last year and is aimed at providing sharpened performance and a greater user experience for operators.

New and improved features include:

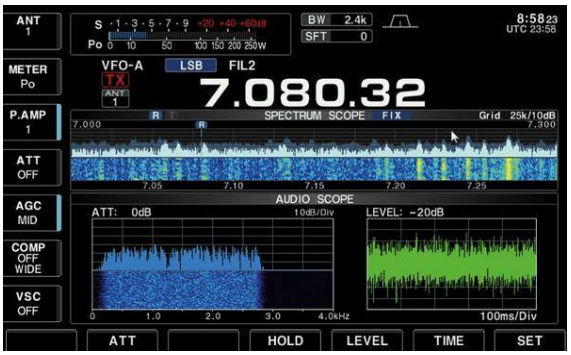
1. **Spectrum Waterfall Display:** Review RF and AF characteristics on the IC-7700's impressive 7-inch color LCD. Includes a wide screen setting.

2. **PC Mouse Operation:** Connect a mouse via USB to select operating frequency and control the spectrum scope.

3. **Audio Scope Function:** Review the FFT scope with waterfall and oscilloscope. In CW mode, observe mic compressor level and other attributes.

4. **Digital Voice Recorder:** Automatically capture incoming/outgoing calls onto an external memory card or flash drive.

5. **Direct Remote Control Operation:** Connect directly to an IP network using Icom's optional RS-BA1 software and the IC-7700's internal base station function. (A user operation PC is still required; a base station PC is not.)



Mini spectrum and audio scope screen from the upgraded IC-7700

The firmware can be downloaded from the following URL from the Icom Inc website: www.icom.co.jp/world/support/download/firm.

Disaster Communications Compatibility Exercise Uses Automatic Link Establishment or ALE

U.S Amateur Radio operators and Federal Government radio stations are engaged in a nationwide test of their capability to communicate with each other by shortwave radio, in case of an emergency or disaster.

They participated in a 12-day joint readiness exercise running from March 27 through April 7, covering all areas of USA, using a digital High Frequency (HF) radio system known as Automatic Link Establishment (ALE). This High Frequency Interoperability Exercise 2014 (HFIE-2014) runs concurrent with the federal National Exercise Program (NEP) 2014.

ALE is a standardized digital signalling protocol used by each radio service, ham and government, to establish HF communications between their own stations. For the first time, the government regulatory agencies (FCC and NTIA) have authorized these stations to communicate with each other using ALE. HF radio enables long distance communication independent of terrestrial communications infrastructure, internet, or satellites.

To facilitate the communication testing, the Federal Emergency Management Agency (FEMA) secured temporary authority from the National Telecommunications and

Information Administration (NTIA) and the Federal Communications Commission (FCC). Federal Government radio stations and hams are allowed to communicate with each other using ALE during the exercise. Under existing rules, hams have secondary access to 5 HF radio channels on which Government stations are-the-primary-users.

HF radios used by Federal Government stations have the ALE capability built into the hardware. Amateur Radio operators have implemented the same ALE protocols using their personal computers with ham radio equipment and software. The Special Temporary Authority allows for on-the-air testing of interoperability between the hardware and software-generated ALE implementations.

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Participation in the interoperability exercise is open to all ALE-capable Federal Government radio stations and to all ALE-capable US Amateur Radio stations. While five channels are available if needed, the test plan calls for using only two of the channels in order to minimize impact on other stations not participating in the exercise.

The HFIE-2014 is a semi-annual ham radio readiness exercise coordinated by the HFLINK organization http://hflink.com and the Global ALE High Frequency Network http://hflink.net

It is open to all ALE-capable ham radio stations. Technical and operational guidelines for ham and federal government stations are available at: http://hflink.net/hfie2014

HOW ALE WORKS

Automatic Link Establishment, commonly known as **ALE**, is the worldwide de facto standard for digitally initiating and sustaining HF radio communications.

An ALE radio combines an HF SSB radio transceiver with an internal microprocessor and MFSK modem. It is programmed with a unique ALE Address, similar to a phone number (or on newer generations, a username). When not actively in contact with another station, the HF SSB transceiver constantly scans through a list of HF frequencies called channels, listening for any ALE signals transmitted by other radio stations. It decodes calls and soundings sent by other stations and uses the Bit error rate to store a quality score for that frequency and sender-address.

To reach a specific station, the caller enters the ALE Address. On many ALE radios this is similar to dialling a phone number. The ALE controller selects the best available idle channel for that destination address. After confirming the channel is indeed idle, it then sends a brief selective calling signal identifying the intended recipient. When the distant scanning station detects ALE activity, it stops scanning and stays on that channel until it can confirm whether or not the call is for it. The two stations' ALE controllers automatically handshake to confirm that a link of sufficient quality has been established, then notify the operators that the link is up. If the station called fails to respond or the handshaking fails, the originating ALE node usually selects another frequency either at random or by making a guess of varying sophistication.

Upon successful linking, the receiving station generally emits an audible alarm and shows a visual alert to the operator, thus indicating the incoming call. It also indicates the call sign or other identifying information of the linked station, similar to Caller ID. The operator then un-mutes the radio and answers the call then can talk in a regular conversation or negotiates a data link using voice or the ALE built-in short text message format. Alternatively, digital data can be exchanged via a built-in or external modem (such as a STANAG 5066 or MIL-STD-188-110B serial tone modem) depending on needs and availability. The ALE built-in text messaging facility can be used to transfer short text messages as an "order wire" to allow operators to coordinate external

equipment such as phone patches or non-embedded digital links, or for short tactical messages.

For the average user of ALE, after learning how to work the basic functions of the HF transceiver, it became similar to operating a cellular mobile phone. For more advanced functions and programming of ALE controllers and networks, it became similar to the use of menu-enabled consumer equipment or the optional features typically encountered in software. In a professional or military organization, this does not eliminate the need for skilled and trained communicators to coordinate the per-unit authorized frequency lists and node addresses - it merely allows the deployment of relatively unskilled technicians as "field communicators" and end-users of the existing coordinated architecture.

An ALE radio system enables connection for voice conversation, alerting, data exchange, texting, instant messaging, email, file transfer, image, geo-position tracking, or telemetry. With a radio operator initiating a call, the process normally takes a few minutes for the ALE to pick an HF frequency that is optimum for both sides of the communication link. It signals the operators audibly and visually on both ends, so they can begin communicating with each other immediately. In this respect, the longstanding need in HF radio for repetitive calling on pre-determined time schedules or tedious monitoring static is eliminated. It is useful as a tool for finding optimum channels to communicate between stations in real-time. In modern HF communications, ALE has largely replaced HF prediction charts, propagation beacons, chirp sounders, propagation prediction software, and traditional radio operator educated guesswork. ALE is most commonly used for hooking up operators for voice contacts on SSB (single sideband modulation), HF internet connectivity for email, SMS phone texting or text messaging, real-time chat via HF text, Geo Position Reporting, and file transfer. High Frequency Internet Protocol or HFIP may be used with ALE for internet access via HF.

A complete user's guide and application hand book is available free. CLICK HERE [If the link doesn't work for you, then just Google it.]

VU2TS-Ed –

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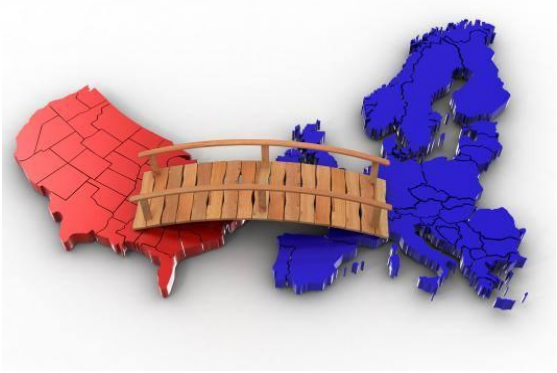
QSL Bridge from USA to EUROPE

Acting as a wormhole, gateway, or whatever you want to call it, the **EuroBureauQSL** has opened a special entry point in USA, where American hams can send their QSLs to EURAO members abroad (no matter where they are) for just the price of a national



stamp. That's it. W2EN – QSL Manager

It is like another Outgoing QSL Service, but, instead of paying the puddle jumping the senders, with their ARRL membership, the recipients do so through EURAO.

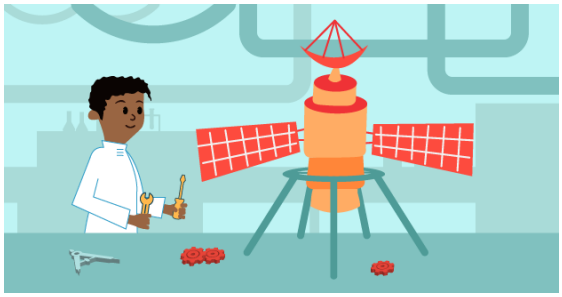
http://www.eurao.org/en/node/566

Tnx: Southgate ARC

Build your own personal satellite!

Have you ever wanted to build your own personal satellite but your last name doesn't start with Gates or Branson? Well, now there's good news. For the price of a car you can now build, test and launch your own personal satellite at home.

Dr. Sandy Antunes, author of DIY Satellite Platform, talks about building his own personal spacecraft Project Calliope. The best part (besides having your own satellite) is that you can now do some serious science.



Find out what kind of satellite Dr.Antunes is building and how he's running the same kinds of tests the large Aerospace companies do, but for a fraction of the cost. A must visit site:

http://www.diyspaceexploration.com/how-to-build-your-own-personal-satellite/

[Tnx: Southgate ARC / Stephen G7VFY]

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MacLoggerDX- Version 5.53 released

Dog Park Software is pleased to announce that version 5.53 of **MacLoggerDX** has been released.

What's New in this version:

• Direct AppleScript logging from MacDoppler (Requires-2.14)
• CW Macro file blank line separators added.
•Faster-split-setting.
•New-Google-Maps-API.
• Better ADIF Confirmation error reporting.
• Added Bands panel display filtered spots.
• Fixed FlexRadio SmartSDR 6x00 bug, added GCD-Sockets.
• Fixed dxcluster Spot button bug.

MacLoggerDX is the Total Mac Ham Radio Assistant and premier Mac logger:

Organizing and filtering the spots from your favourite DX Cluster for DXing, Contesting or casual rag-chewing.

It supports close to a hundred radios, automatically tuning to the spots you are interested in and optionally swinging your beam around.

Alerting you to rare contacts or Band Openings and looking up, displaying on 2D, 3D and Satellite Maps and logging your contacts to a super-fast sql database.

MacLoggerDX can also email you when the Bands are open or that rare DX is spotted.

Awards Tracking, Band Activity, Schedules, Memories, QSL Generation, ADIF import, export, eQSL, LoTW Confirmations and much more.

This is a free update for all Version 5 customers and can be downloaded from: http://dogparksoftware.com/MacLoggerDX.html

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SATELLITE ANTENNA FOR SO-50 / ISS

In this video, **Dave Tadlock KGØOZZ** describes his home made 21 element 2 meter and 70 cm yagi antenna for working SO-50, the ISS and other amateur radio satellites

https://www.youtube.com/watch?v=sTKI97e3uX8

Tnx: AMSAT-UK

The 2014 ITU Handbook on Amateur and amateur-satellite services is now available for download.

This Handbook provides general information about the amateur and amateur-satellite services. It also includes a compendium of existing ITU texts of relevance to the amateur and amateur-satellite services.

Download the handbook from the UBA site at

http://www.uba.be/sites/default/files/uploads/downloads/R-HDB-52-2014-OAS-MSW-E.pdf

LIST OF STATIONS WHO PARTICIPATED IN FIELD DAY

- **Gurgaon, Haryana** VU2ATN, VU2YK, VU2OEC, VU2FR, VU2UUU, VU2VUV and few others. VU2KIZ from Jaipur will be traveling to Gurgaon to join the team.
- **New Delhi / Dhanolti, Uttarakhand** VU2YEP: QRV from his car in ND else from Dhanolti, Tehri Garhwal, Uttarakhand
- **Morena, Madhya Pradesh** VU2JAU (+ group)
- **Indore, Madhya Pradesh** VU3SXN
- **Morepukur, Dist. Hooghly, West Bengal** VU3BGI
- **Rajkot, Gujarat** VU2EXP (with his ham family - 2 Old Boys andXYL who's an SWL)
- **Sanjay Gandhi National Park, Mumbai, Maharashtra** VU3ONE
- **Vangani, Maharashtra** VU2WSM (+group)
- **Lonavala, Maharashtra** VU2YKG, VU2JP, VU2HIT, VU2RIO, VU2SFH (and others)
- **Mangalore, Karnataka** VU2RDO (MangaloreAmateur Radio Club, group of 10+ led by VU2RCT)
- **Kanakapura, Karnataka VU**3UNO
- **Trivandrum, Kerala** VU2AJO
- **Erode, Tamil Nadu** VU2ICI
- **Nilgiris, Tamil Nadu** VU3IRH
- **Thanjavur, Tamil Nadu** VU3PJT
- **Yelagiri Hills, Tamil Nadu** VU2ABS (with XYL VU3CHM and harmonics)

Besides the above, there were many who registered to confirm participation but operating from their own home QTH. Therefore their call signs are not listed here.

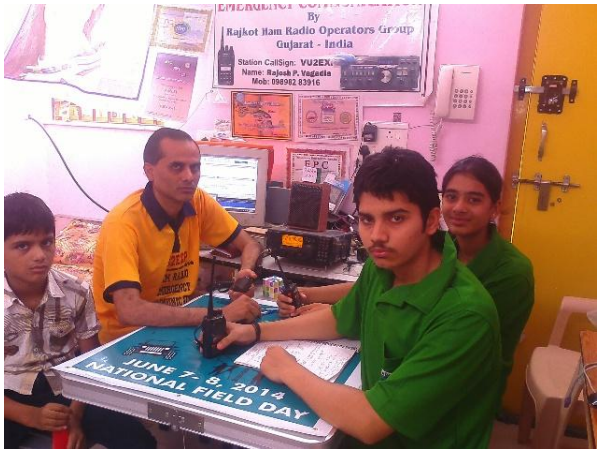
Here are some pics:

Aerial view of our field day location

VU2RDO – Field Day - Mangalore. Note: Chandra confirms that's not a CROP CIRCLE!!

HF station in operation (Op: VU2RCT)

G5RV being set up – VU2RCT with brand new hams!



VU2EXP Field Day Rajkot

AMATEUR RADIO: GATEWAY TO WIRELESS COMMUNICATIONS

ACHIEVEMENTS

Hearty Congratulations!

NANDU VU2NKS received his **5-Band DXCC –** happens to be the 5th one in VU2 after VU2GDG-VU2DVP-VU2CVP & VU2PTT.

NANDU VU2NKS also received the **Belgian HERITAGE AWARD**

LUCKY VU2LBW received his **QRP-DXCC**

ARASU VU2UR received the **GAGARIN AWARD** for 80 meters CW and the **RAEM-110-SRR AWARD**

LAXMAN VU2LX received five ITALIAN **ARTISTS-AWARDS –** *BERNINI, BOTTICELLI, RAFFAELLO, ROMEOG, and TINTORETTO*

VU2RMS RAMESH has received his **DXCC** for mixed bands and for single band 20 Meters. Including contest certificates, the wallpaper count in Ramesh's shack is 150!

CONGRATS TO ALL

Ham Radio Earth-Moon-Earth Art Event on Google+ Hangout

OPTICKS is a live radio transmission performance between the Earth and the Moon during which images are sent to the Moon and back as radio signals using the MMSSTV Slow San TV software developed by Makoto Mori JE3HHT.

A live Google+ hangout took place on May 1st. The project was realized by visual artist Daniela de Paulis (IT/NL) in collaboration with Jan van Muijlwijk PA3FXB and the CAMRAS radio amateurs association based at Dwingeloo radio telescope Holland. Each live performance was made possible thanks to the collaboration of radio amateurs Howard Ling G4CCH, Bruce Halász PY2BS and Daniel Gautschi HB9CRQ.

The live hangout featured a "touch" and bounce of Humans in Space Youth Art Competition artwork off the Moon using OPTICKS radio wave technology. Guests and remote participants discussed the significance of the artwork and the performance and explore the impact of past, present, and future human presence on the moon.

PI9CAM Dwingeloo 25 meter dish antenna

OPTICKS employs a technology used by radio amateurs called Earth-Moon-Earth, EME - or Moonbounce in which the Moon is used as a natural reflector for radio signals.

In October 2009 Daniela de Paulis and Jan van Muijlwijk PA3FXB started pioneering a new application of Moonbounce technology, called Visual Moonbounce, which allows sending images to the Moon and back, combining Radio Astronomy with amateur radio technologies.

The title OPTICKS is inspired by Newton's discoveries of the light spectrum, reflection and refraction. Similarly, the colours composing an image – converted into radio signals – are bounced off the Moon (reflected and refracted) by its surface during each live performance.

The performance is introduced by live sounds of amateur radio signals captured by the Dwingeloo antenna tracking the moon.

Story source http://www.opticks.info/

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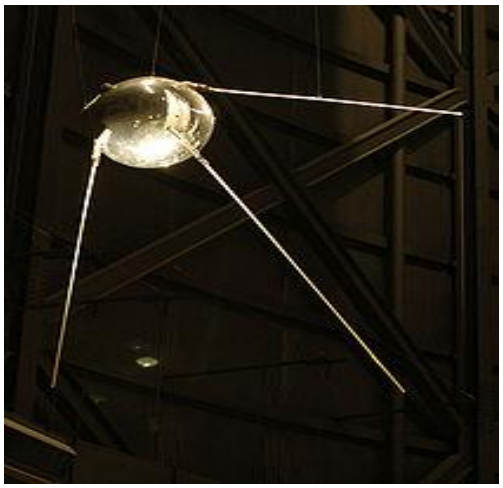
ORBITAL SATELLITES CARRYING AMATEUR RADIO – OR SIMPLY "OSCAR"

The Russians launched SPUTNIK – the first ever man-made object to orbit the Earth – successfully on October 4, 1957 into an elliptical low-earth-orbit. SPUTNIK was a 23 inch polished metal sphere with external antennas to transmit telemetry; the signals were monitored around the world on 20.005 and 30.002 MHz. This success triggered the "space race" and ushered in new political, military, technological and scientific developments.

For the next 30 years, the Cold War rivalry between the US and the former Soviet Union focused on attaining firsts in space exploration. These were seen as necessary for national security and symbolic of technological and ideological superiority. The "space race" involved pioneering efforts to

launch artificial satellites, sub-orbital and orbital human spaceflight around the Earth, as well as piloted voyages to the Moon.



SPUTNIK-1

Barely four months after the successful launch of Sputnik I, the United States launched the unmanned Explorer I on January 31, 1958. At about that same time, a group of hams on the West Coast -- Lance Ginner, K6GSJ; Chuck Smallhouse, W6MGZ; Ed Beck, K6ZX; Al Diem; Chuck Townes, K6LFH (SK), and Nick Marshall, W6OLO (SK) -- began toying with the idea of launching an Amateur Radio satellite into orbit and organized themselves into Project OSCAR.

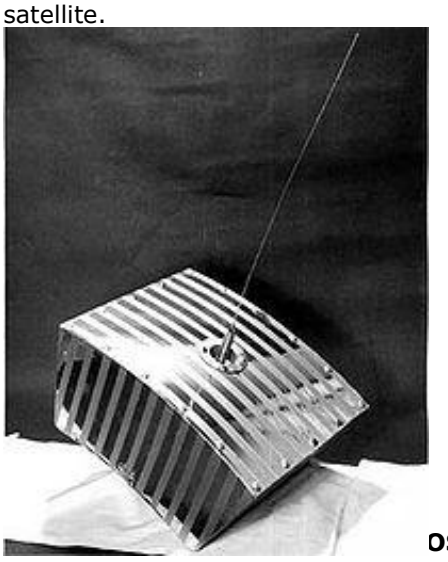
After a series of high level exchanges among Project OSCAR members, the ARRL and the US Air Force, a launch opportunity on a Thor DM-21 Agena-B rocket from Vandenberg Air Force Base in California was secured for the very first Amateur Radio satellite: *OSCAR I*. It was successfully launched into a low Earth orbit on the morning of December 12, 1961 -- four years after the launch of Sputnik I. The satellite was also the world's first non-government satellite.

In 1961, more than 570 amateurs in 28 countries forwarded observations to the Project OSCAR data reduction center. Unfortunately, OSCAR I lasted only 22 days in orbit before its batteries gave out. Transmitting "HI HI" in Morse code on 145 MHz, OSCAR I ran on only 140 mW on battery power. The word "HI" was chosen over any particular call sign, since it was -- and still is -- is internationally recognized as a friendly greeting among radio amateurs.

The satellite was built, quite literally, in the basements and garages of the Project OSCAR team. It was the first satellite to be ejected as a secondary payload from a primary launch vehicle and then enter a separate orbit. This was accomplished using a very high technology and thermally balanced ejection system: a $1.15 spring from Sears' hardware. The total out-of-pocket cost (not including material donations) of OSCAR I: was only $68.

OSCAR I was a 10 pound, 12"×12" package [fore-runner of CUBESAT?] constructed mostly of magnesium, used for both its strength and because of weight requirements. The satellite was located near the tail-end of the rocket, near the engines. The satellite was tested and designed to handle nearly 50g of force, the type of shock that might be encountered during launch and separation phases. [G-force is the measurement of acceleration as weight – Ed] The final version of OSCAR was gold-plated and had black metallic strips across its case to regulate its internal temperature. Explosive squibs and compression springs helped propel OSCAR I away from the rocket. Spring switches on the satellite released the antenna and applied power to the transmitter/keying circuits.

A keyer and timer were used to generate the "HI." The speed at which "HI" was sent was based upon the internal temperature of the satellite.



OSCAR I

Two thermistors located within the craft controlled the timer, and it's the temperature variations the thermistors sensed that determined the CW speed. Three 18 V batteries were placed in parallel to power the transmitter, timer and keyer. The entire unit was filled with a foam-like material to keep the internal boards immobile. Since there was no solar-cell charging system available at the time, the original designed/expected operating time for the batteries was approximately 28 days.

OSCAR I opened to door to the world of Amateur Radio satellite communications. Even today, Amateur Radio operators continue to build and launch radio satellites that perform and function in ways that the original designers could only imagine!" --

Thanks: AMSAT & ARRL

Next issue: The rest of the OSCARS

AMSAT-VO52 COMPLETES NINE YEARS

OM Mani/VU2WMY writes:

Dear-Friends,

It gives us great pleasure to inform that 'HAMSAT - VO-52' is successfully completing 9 years of fruitful services on 4th May 2014 and entering into her 10th year of services on 5th May. HAMSAT was launched as a piggy back aboard PSLV-C6 on 5th May 2005 (5-5-5). We do hope that the contribution of 'HAMSAT' by India/ISRO to the 'Global Amateur Radio Fraternity' has served its purpose. It gives us great pleasure and satisfaction to note that 'HAMSAT VO-52' has remained as one of the most sought after and favourite 'Linear Birds' among the radio amateurs for her sensitivity, strong down link signals, stability and the ease to work.

Though expected to work for two years (mainly, considering the battery), HAMSAT VO-52 has really out lived and still doing strong. Latest telemetry indicates all the parameters and systems to be normal and satisfactory. We do hope that 'HAMSAT' would continue to provide her good services to 'Amateur Radio fraternity' for many more years.

On this happy occasion, we place on records our sincere thanks and appreciations to, Chairman ISRO, Scientific Secretary ISRO, Director ISRO Satellite, Mission Director, Operations Director, 'HAMSAT' project team at various ISRO centres, AMSAT-India and Williams Leijenaar PE1RAH for their contribution in achieving this this milestone. 73 de

Mani-[VU2WMY/KJ6LRS]
Secretary-&-Station-In-Charge
Upagrah Amateur Radio Club VU2URC

Earth's Music

Our planet is a natural source of radio waves at audio frequencies. Our ears can't detect radio waves directly, but we can convert them to sound waves with the aid of a very low frequency (VLF) radio receiver and an appropriate antenna.

While chatting with Raja VU2KSJ on 80 meters one evening the topic of VLF reception came up, and Raja mentioned that he was putting up a "Beverage" antenna for monitoring the 3 KHz to 30 KHz VLF bands.

As the Earth races on its complicated path through the heavens, powerful and mysterious planetary forces work their magic. The result is a cacophony of natural Radio Sounds. There are different types of signals.

CHORUS – sounds almost like a flock of birds, occurring most frequently in the early morning hours hence it is nicknamed the Dawn Chorus. The tone increases between 1 and 5 KHz. The electromagnetic dawn chorus is believed to be generated by a Doppler-shifted cyclotron interaction between energetic electrons and ambient background VLF noise. Dawn choruses occur more frequently during magnetic storms. This phenomenon also occurs during aurorae, (when the ionosphere is ionized by an incoming solar storm) when it is termed an auroral chorus.

HISS - Electromagnetic hiss is a naturally occurring Extremely Low Frequency/Very Low Frequency electromagnetic wave (i.e., 300 Hz – 10 kHz) that is generated in the plasma of either the Earth's ionosphere or magnetosphere. Its name is derived from its incoherent, structureless spectral properties

which, when played through an audio system, sound like white noise (hence the name, "hiss").

TWEAKS result from spherics that echo back and forth between Earth and the Ionosphere. They usually sound pure in tone – almost like a note from a musical instrument – sometimes resembling a "ping" sound.

WHISTLERS - 1. A whistler is a very low frequency or VLF electromagnetic (radio) wave generated by lightning. Frequencies of terrestrial whistlers are 1 kHz to 30 kHz, with a maximum amplitude usually at 3 kHz to 5 kHz. Although they are electromagnetic waves, they occur at audio frequencies, and can be converted to audio using a suitable receiver. They are produced by lightning strokes (mostly intracloud and return-path) where the impulse travels along the Earth's magnetic field lines from one hemisphere to the other. They undergo dispersion of several kHz due to the slower velocity of the lower frequencies through the plasma environments of the ionosphere and magnetosphere. Thus they are perceived as a descending tone which can last for a few seconds. The study of whistlers categorizes them into Pure Note, Diffuse, 2-Hop, and Echo Train types.

In addition to the VLF Whistlers, we can hear Whistlers on VHF and UHF bands also periodically. Quite often, when we are tuning or even when parked on a VHF or UHF channel, we might hear a "Zip" or a "Whizz" sound lasting up to a second. This is the result of meteors entering the atmosphere and generating RF while they are being burnt up due to the friction in the lower atmosphere.

According to Raja VU2KSJ, listening to VLF signals opens up a whole new world!!

Albert Einstein, explaining Radio...

"You see, wire-telegraph is a kind of a very very long cat. You pull his tail in New York, his head is "meowing" in Los Angeles. Do you understand this? RADIO operates exactly the same way – you send signals here, they receive them there. The only difference is that there is no cat"

VU7AG AT THE DAYTON HAMVENTION

The Dayton Hamvention is a hamfest generally considered to be the largest hamfest in the world. It is held each May at the Hara Arena in Trotwood, near Dayton, Ohio. Hara Arena has been the home of Dayton Hamvention since 1964, but the convention has been held since the year 1952.

The Hamvention offers forums, exhibit space and a flea market and usually claims to have over 20,000 visitors. Amateur Radio enthusiasts go out of their way to attend the Hamvention, travelling from all over the world.

Among the many events that take place at the Hamvention, the DX Forum and the DX Dinner, sponsored by the South West Ohio DX Association (SWODXA), have been the 'must-attend' events for DXers for a long time. The DX Forum showcases some of the fine DXpedition efforts of the year gone by, followed by the announcement of 'DXpedition of the Year' award by SWODXA.

This year, VU7AG was be one of the Dxpeditions making a presentation in the DX Forum along side FT5ZM (Amsterdam & St. Paul Islands), K9W (Wake Island) and T33A (Banaba-Island).

Krish W4VKU (VU2VKU), the team leader was leading the presentation and was joined by team-member Pai - VU2PAI.

The presentation was well received by the gathering. An indigenous effort, it made an impression on everyone who attended. Many appreciated the challenges that were overcome in putting together a world-class expedition and were hugely supportive of all such 'home-grown' future endeavours.

"It gives the entire VU7AG team a great sense of pride to be provided a platform to showcase the very successful DXexpedition to the amateur fraternity at an event like Dayton Hamvention."

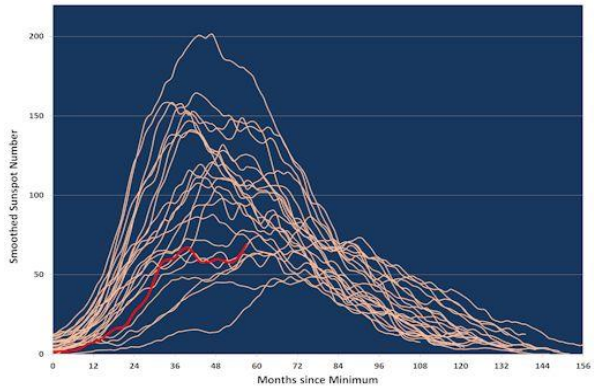
Krish-W4VKU, Pai-VU2PAI, NANDU-VU2NKS, BASAPPA VU2NXM, CHANDRA VU2RCT, ARAVIND VU2ABS, YL RAJI VU3CHM, CHETAN VU3DMP, DEEPAK VU2CDP.

All the Dayton Dxpedtion presentations were streamed live. The recordings are available in

http://www.ustream.tv/recorded/47685983

IS IT REALLY SOLAR MAX?

During May last, at the Space Weather Workshop in Boulder, Colorado, solar cycle expert Doug Biesecker of NOAA announced that "Solar Maximum is here, finally." According to his analysis, the sunspot number for Solar Cycle 24 is near its peak right now. Spoiler: It's not very impressive. "This solar cycle continues to rank among the weakest on record," says Workshop attendee Ron Turner of Analytic Services, Inc. To illustrate the point, he plotted the smoothed sunspot number of Cycle 24 vs. the previous 23 cycles since 1755:



"By all Earth-based measures of geomagnetic and geoeffective solar activity, this cycle has been extremely weak," notes Turner. Still, there is a chance for significant solar activity in the months and years ahead. Let's just hope it is not too significant! Hi

A BRIEF REPORT ON THE IARU-REGION-III MEETING IN BRISBANE, AUSTRALIA

The recent annual gathering of the Directors followed the important Asia Telecommunity or APT meeting of delegates to consider a bloc view on agenda matters at next year's World Radio Conference in Geneva.

All six IARU Region 3 Directors met - Shizuo Endo JE1MUI, Peter Lake ZL2AZ, Professor Rhee HL1AQQ, Geoff Atkinson VK3TL, Wisnu Widjaja YB0AZ and Chairman Gopal Madhavan VU2GMN.

They were assisted by Secretary Ken Yamamoto JA1CJP and joined by IARU President Tim Ellam VE6SH, and Region 1 President Hans Blondeel Timmerman PB2T.

They reviewed progress on a number of tasks identified at their last meeting in August 2013 in Tokyo.

Directors reported on their various responsibilities, with coordinators and other reports read. In addition reports were tabled from the IARU in Region 1 and 2 which broadly outlined their activities.

A special report from the IARU Region 3 Directors Peter Lake ZL2AZ and Shizuo Endo JE1MUI was received on their participation at the Asia Telecommunity meeting. Two items of special interest to Amateur Radio were considered including the possible secondary allocation near 5 MHz.

The pair reported on Memorandum of Understanding between the IARU and APT being agreed in principle that was anticipated to be signed at the APT Plenary in November this year.

Amateur Radio in some of the Pacific Islands had become inactive due to the departure of expatriate operato.rs, but the Directors noted with pleasure that some are now wanting to revive activities there and offers of assistance are being developed.

The Region 3 Conference in Yogjakarta in October 2015 was discussed, with the venue to be decided in November 2014.

Two directors, Gopal Madhavan VU2GMN and Wisnu Widjaja YBØAZ will represent IARU Region 3 at the next IARU Admini-strative Council meeting and IARU Region 1 Conference in Varna, Bulgaria in September.

Special prefixes for Spanish radio hams

On the occasion of the proclamation of **D. Felipe de Borbón** as **King of Spain**, radio amateurs will be able to use special prefixes AM, AN and AO

For the period June 18 - September 18, 2014 radio amateurs will use these prefixes:

- callsigns prefixed EA will use the prefix AM
- callsigns prefixed EB will use the prefix AN
- callsigns prefixed EC will use the prefix AO

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AMATEUR RADIO: GATEWAY TO WIRELESS COMMUNICATIONS

OH8X – Arkala, Finland

OH8X is possibly the most advanced radio DX sports station in the world is located at 65.18degN, 26.24degE near Finland's Arctic Circle. The site is a cluster of some of the largest amateur radio antennas in the world.

The stations mission statement established in 2007 is to providing an alternative way to promote amateur radio activity among young people by establishing a team of skilled participants. Targeting and conducting competitive activities at extreme level as their way of self-education and self-satisfaction to boost interest among those who seek and value competitive amateur radio as an option.

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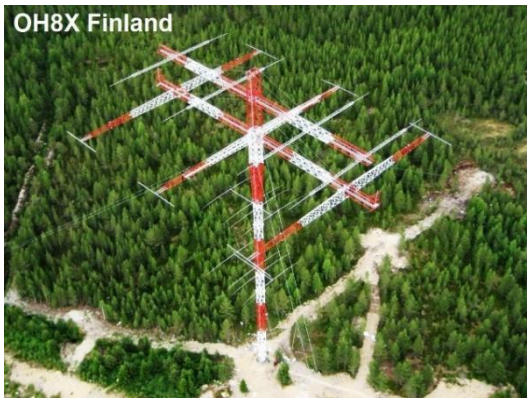
I want to highlight the biggest ham antenna in the world. I am referring to the 160 and 80 meter mammoth antenna at OH8X Arkala. You can see it (big red and white), in the center of the pic above. Below is a closer look at it.



The tower stands at 330 feet high and is fully rotatable by a very large geared motor at the base.

The top boom carries a full size 1/2 wave 80 meter beam. The boom length is 215 feet, loaded with 5 elements ranging up to 140 feet each in length. The gain is rated at 15.7 dBi.

The next lower level boom is a 160 meter beam. It has 3 elements up to 190 feet in length, with large capacitance hats on the ends. The rated gain is 12.9dBi.

A little lower down the tower are 2 stacked 40 meter beams.

I wonder if any of you have been there. If and when you are anywhere near Finland, don't miss OH8X!!

VU2TS-Ed…drool, drool