

Ham

RADIO

News

Newsletter of the Amateur Radio Society of India (Indian Affiliate of IARU)
July 2013 Issue



President's message



Dear members

India had an enormous natural calamity in the mountainous regions of Uttarkhand.

Following a cloudburst, walls of water sometimes 15 feet high, swept down carrying everything in its path, drowning hundreds and marooning many thousands. It was described as a Himalayan tsunami.

The area being almost totally cut off, access was limited to helicopters which were totally occupied in rescue operations and so radio amateurs were not able to get there. However a few operators set up stations in the lower reaches and conveyed health and welfare messages to several other relay stations.

Preparations are on for the AGM to be held in Pune on Saturday the 14th September 2013 when elections for the office bearers for the next two years will take place also. We are hoping the meeting will be well attended by members from that region and close by areas.

Reports are coming in of several clubs conducting training courses for new hams and this is very encouraging, especially as the process of issue of licenses is also getting streamlined by WPC. We hope clubs and ham groups all over India will take up this responsibility as the need of the hour is more licensed operators.

Two directors from IARU Region 3 along with the secretary and others from various societies attended a preparatory meeting for WRC-15, (the World Radio Conference in 2015). The meeting was held in Bangkok.

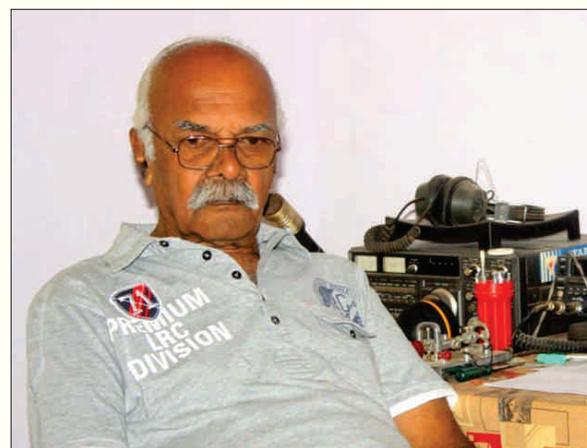
IARU is seeking a secondary allocation within the band 5 250 kHz -5 450 kHz which will be very useful, especially for emergency communications.

Don't forget to prepare to attend the Hamfest in Gwalior also - the first time it is being held in North India

I hope to see many of you in Pune as unfortunately I will miss being in Gwalior.

73, de Gopal Madhavan VU2GMN

From the Editor's Desk



There was very poor response to the VU FIELD DAY on June 1 and 2 this year. My dream is to have at least a hundred VU stations QRV on the field day! With co-operation from members it is possible. Shall we try it next year?

Once again, radio-amateurs have rushed to Uttarkhand and surrounding areas to provide communication links for the search-and-rescue operations during the recent calamity. However, I heard that the authorities did not want amateurs as they found many cellphone-towers intact and the army & air force were handling the needed communications. Amateurs stationed in faraway Delhi, & Dehra Dun helped out with providing information to people all over the country who were eagerly trying to find out about their missing kin.

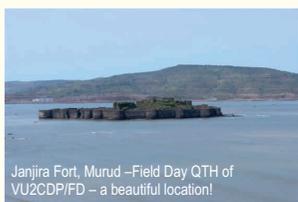
Sol is slowly waking up; we see some activity and the sunspot number is slowly going up. We need to wait and see if the band conditions really improve by the end of this year and through the next. Many scientists are of the opinion that there may be very strong flares causing heavy QRM to our planet.

Once again, I request members to send articles, news, and photos for publication in Ham Radio News.

73, de VU2TS

NATIONAL FIELD DAY JUNE 1 & 2 2013

The first National Field Day started off well with several stations across the nation taking part. The response from local as well as DX was low for many reasons, the first being the very poor band conditions. And then there were several contests going on at the same time; and lastly, being the first such field day the DX stations were not aware of the event.



Janjira Fort, Murud –Field Day QTH of VU2CDP/FD – a beautiful location!

It is hoped, in future years, more stations will take part, and the rest of the world is aware of

the VU field day, making it a very exciting weekend for us. Just imagine – a hundred VU stations on field day!!

Among the participants were Sarla/VU2SWS, Aravind/VU2ABS, Deepak/VU2CDP, VU2MHC the MIT Ham Club Manipal, Ajit/VU2AJO, and Chandra/VU2RCT.

HAMS PROVIDE EMERGENCY COMMUNICATIONS

In northern India, the early seasonal monsoon rains are three times as heavy as usual, causing flooding, mudslides in the Uttarkhand region, resulting in heavy death toll. The disaster caught everyone by surprise.

The emergency communications provided by radio amateurs are well known to disaster authorities and the government, through their preparedness drills and other presentations.

India's National Coordinator for Disaster Communication Jayu M. Bhide VU2JAU said two amateur radio stations were active in the disaster area, at Dehradum and Uttarkshi. He has personally been in contact with them.

They have been sending messages via coordinating stations in Gwalior, New Delhi and elsewhere. The emergency communications they provide will continue for some time.

Government officials estimate 33,000 people have been rescued so far and around 63,000 are missing.

Rescue efforts involving soldiers are continuing, and more than 50 air force helicopters have dropped food, water and medical supplies to people trapped by the flood.

Jayu VU2JAU

President ARSI visits Gurgaon Club

VU2GMN – Gopal Madhavan, President, Amateur Radio Society of India, took a detour to New Delhi from Jamshedpur to discuss and meet WPC officials at Sanchar Bhawan, New Delhi, with respect to many pending issues pertaining to licensing, delay in MHA verification, release of additional spectrum in consonance with international parlance.

activities, dissemination of hobby of amateur radio, thus encouraging new members to join the national body of Radio amateurs, i.e., ARSI to strengthen and support it.

It is important to mention here that ARSI QSL BURO has been very much operational and many ARSI members



ARSI – Gurgaon Chapter, invited and welcomed VU2GMN on 7th May 2013 at the Club. The group comprised of VU2ATN (Atanu), VU3UUU (Kaustav), VU2KD (Soffi), VU3ORN (Ray), VU2OEC (Rajesh), SWLs Mayank and Anurag.

Gopal deliberated on many pending issues and apprised the group, outcome of his eyeball with WPC officials at Sanchar Bhawan. He also expressed his concern over not much increase in the membership of ARSI. There are only 400 Life Members and 100 Corporate Members. He expressed that ARSI local Chapters must work towards generation of amateur radio

herein Delhi-NCR have been regularly getting QSL cards. Members must work DX and use the services of internationally recognised ARSI QSL BURO for incoming or outgoing QSL cards. Also, the e-copy of the ARSI Ham News in pdf format is regularly uploaded on portal of Amateur Radio Society of India – www.arsi.info, which can easily be downloaded by the members.

Before departing, VU2GMN, thanked everyone and encouraged the group for the good work with all support from ARSI Headquarters.

Fighter Pilot Ham



A71AM - SAIF ALKHAYARIN, a Qatar ham, friend of VU2ASB (Ashok) and VU2YK (Rahul), visited Gurgaon for an eyeball during 27 April 2013. An eyeball was arranged at Powergrid Club – the usual den of local hams.

The group felicitated A71AM – Saif, with mementos amidst smiles and huge applaud. Hams present were VU2ASB (Ashok), VU2YK (Rahul), Eshaan-harmonic of Kaustav and Tarveen, VU3VUV (Tarveen), VU2ATN (Atanu), VU2LAS (Satish), VU3UUU (Kaustav), VU2OEC (Rajesh).

VU2YK – Rahul, showed skills of flying Quadrocopter – much loved by fighter pilot ham from Qatar alongwith QRP Eshaan – harmonic of Kaustav and Tarveen.



A71AM – Saif, expressed his happiness over the warm welcome of VU hams with his QSL cards personally handed over to everyone. Saif took interest in the local activities of the club. He also shared many on air joyful and funny experiences.

Thanks to VU2ASB and VU2YK for accompanying A71AM all the way from Delhi and made the evening memorable.

Tnx: Rajesh VU2OEC

LONG HAUL ON VHF

Congrats to Satheesh VU2WSM and friends for the VHF DX QSO with Sangeeth A45WH of Oman – a distance of ~1600 Km - on 17th May 2013.

They used the Matheran Repeater VU2BBB – Sangeeth has posted a video on You Tube :

<http://www.youtube.com/watch?v=wH3y7ztjPOg>

Summer Festival at Valparai

Every year in June, a three day summer festival is held at Valparai (near Coimbatore) to promote tourism. Thousands of tourists visit Valparai and the attractions include a Flower Show and other cultural events.

Ibrahim/VU2IRH along with VU2FFM, VU3PIP, VU3KIT, and VU2WDP; SWLs BALRAJ, PALANI, RAVI had undertaken communications to co-ordinate the various activities of the event. The District Collector awarded certificates to all the participants.

Tnx Saif VU2DX

SSB with a Raspberry Pi

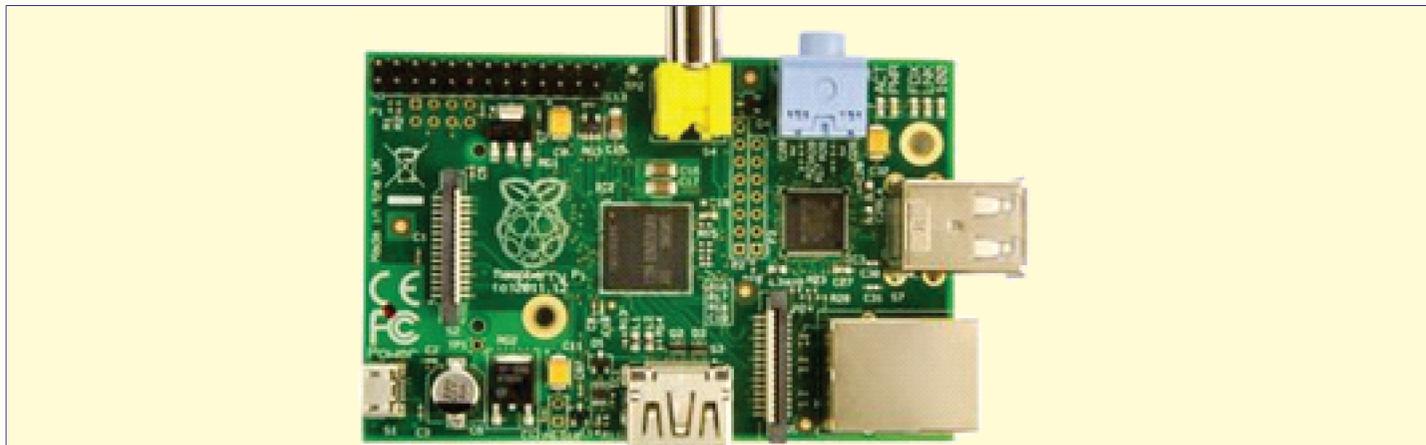
The Raspberry Pi is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools.

This has a Broadcom BCM2835 system on a chip (SoC), which includes an ARM-1176JZF-S 700 MHz processor (The firmware includes a number of "Turbo" modes so that the user can attempt overclocking, up to 1 GHz, without affecting the warranty), VideoCore IV GPU, and was originally shipped with 256 megabytes of RAM, later upgraded to 512MB. It does not include

The RaspberryPi receives the Microphone input via an external USB sound device. To improve the SSB quality, the signal is companded by a A-law compression technique. Three parallel BS170 MOSFETs where directly driven by RaspberryPi GPIO4 output to create about 1 Watt of RF.

Guido says: "On 40m I could made several SSB contacts through Europe using this setup, receiving stations back by using a nearby online WebSDR receiver."

Blog - Direct SSB generation by frequency modulating a PLL:



a built-in hard disk or solid-state drive, but uses an SD card for booting and long-term storage.

If you are wondering why I am introducing the Raspberry Pi to you, read on....

Guido **PE1NNZ** has been doing some very impressive work on direct SSB generation using a PLL and implemented it on a Raspberry Pi mini computer.

Guido has released a code to enable the Raspberry Pi computer board to generate SSB on the 7 and 14 MHz bands. On his blog he writes:

The following code (link at the end of the article) can generate SSB modulation just by controlling a PLL carrier. I have applied this method on the RapsberryPi PLL, and made several contacts on 40m and 20m band with my RaspberryPi.

<http://pe1nnz.nl.eu.org/2013/05/direct-ssb-generation-on-pll.html>

Raspberry Pi as WSPR transmitter up to 250 MHz

<http://downloads.element14.com/raspberrypi3.html?isRedirect=true>

[Disclaimer: FOR INFORMATION ONLY- THIS IS NOT AN ADVERTISEMENT!HI]

A microphone that listens with light

A sensor developed in Norway gives microphones hyper-acute hearing and a sense of direction.

A sensor developed by scientists at SINTEF's MiNaLab will help to make microphones hypersensitive and giving it a "sense of direction".

"Think of traditional videoconference equipment. Several people are sitting around the table, but the microphone has been placed where its sound reception is less than optimal."

With technology of this sort, a microphone will be able to "see" where the sound comes from, pick up the voice of the person speaking, and filter out other sources of noise in the room," explains ICT researcher MatthieuLacolle, who emphasizes that acoustics scientists at SINTEF have also contributed to this innovative solution.

Small but tightly packed

The microphone is packed full of microelectronics. What makes it really special, however, is an optical position sensor that is no more than a millimeter in diameter.

The technology that makes the microphone so sensitive is based on a combination of two optical phenomena; interference and diffraction.

"In principle, a microphone acts like a drum. You have a membrane that vibrates when it is impacted by a sound – which is just a series of pressure waves. And then you have a reference surface in the background. The distance between these two surfaces registers the sound. We do this by measuring light waves from a microscopically small laser, so we can say that the sensor in microphones actually sees the sound," explains Lacolle.

The sensor can measure incredibly small movements, and thus also extremely quiet sounds. If we make the membrane light enough, and let it oscillate freely in the air, the microphone also becomes directionally sensitive. "That also tells us where the sound is coming from," says Lacolle, adding that the membrane is only 100 nanometres thick, almost 1000 times thinner than a human hair.

How the microphone works

In simple terms, we can say that the new microphone operates as follows:

- First, sound pressure is transformed into movements of the membrane.
- These movements are read optically via the light-sensitive detector.
- The light intensity is measured by a sensor which in turn transforms it into an electronic signal that is capable of reproducing the sound.

Some potential applications for the sensor include:

- geophones for seismic shooting
- photo acoustic gas sensors
- accelerometers
- vibration sensors
- gyroscopes pressure sensors
- high-temperature versions of the above-mentioned sensors
- sensors for highly irradiated sites (nuclear power stations, x-ray equipment) or with electromagnetic radiation (sensors in motors or magnetic resonance equipment).

Courtesy:SINTEF

FYI: SINTEF is the largest independent research organisation in Scandinavia. We create value through knowledge generation, research and innovation, and develop technological solutions that are brought into practical use.

Coloured by light

The technology that makes the microphone so sensitive is based on a combination of two optical phenomena; interference and diffraction, both of which are due to the wave character of light.

"If we hold up a CD to the light, we see the play of colours where it reflects the light. This happens because light consists of a spectrum of wavelengths that the naked eye perceives as colours, and these wavelengths are diffracted in different directions" explains Lacolle.

Another phenomenon that can be utilized to measure sound is interference, which occurs when a number of waves are superimposed on each other. You can observe this when you stand in a harbour where incoming waves are reflected by a pier and are superimposed on top of the waves that follow them into the harbour. Complex, apparently chaotic wave patterns can occur, but so do standing waves, which don't appear to move at all," says the SINTEF researcher.

What the SINTEF scientists did was to exploit optical diffraction and interference to measure membrane movements of less than the diameter of an atom by using the optimal sensor.

We have created very special grooved microstructures on the reference surface, which lies directly underneath the microphone membrane. When the laser illuminates these microstructures, we can read off the direction in which the light is reflected by means of photo detectors, which transform the light into electrical signals."

Laboratory mass-production

The microphone thus consists of several elements: an ultrathin membrane, tiny grooved microstructures, a miniaturized laser and a number of photo detectors. Everything is integrated into a tiny circuit that is mass-produced on a silicon wafer on which all the structures are etched, using special equipment within a clean room.

SOLAR FLARES

Powerful solar flares arising these days are reminders that the Sun – our star - can be a temperamental force of nature. And we are still not quite sure how bad the consequences would be if it threw especially violent tantrums.

Flares are cropping up quite often in recent months, as the sun is nearing the maximum point of its 11-year activity cycle. The sun is currently in an active phase of its eleven year cycle. The current cycle, called Solar Cycle 24, began in 2008 and is expected to peak during 2013-2014 and run through 2019-2020.

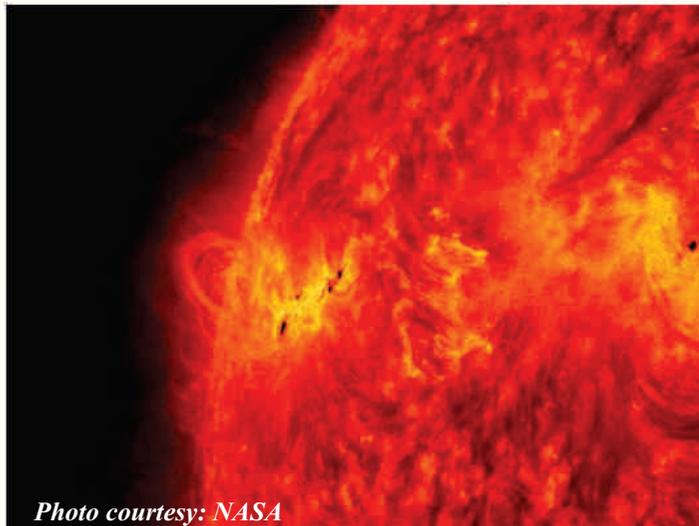


Photo courtesy: NASA

A really powerful solar flare could wipe out worldwide communications and GPS navigation and electrical grids while frying a wide variety of electronics, quickly sending us back to the 19th Century.

That has happened before. It happened in the 19th Century, and was known as the Carrington Event of 1859. A massive solar flare sent a cloud of charged particles that struck the Earth squarely, creating massive currents in the Earth's magnetic field and sending brilliant auroras south as far as Cuba and Hawaii.

About the only thing electrical back then was the telegraph network, and the event a literally shocking impact -- causing some operators to suffer from electric shock, and inducing strong enough currents in the telegraph wires that operators could even disconnect the batteries and operate the telegraph off of the flare-induced electrical flow itself!

Modern electronics are a lot more sensitive, of course, and a similar event today would burn computers, cell phones, new cars and more. More worryingly, it would probably melt major transformers in the power grid, transformers that take months or years to replace and

that are expensive enough that very few spares are kept. Whole continents might be without electricity for a year or longer. Nuclear Power Plants around the world may be destroyed.

Solar flares are bursts of radiation that can disturb Earth's atmosphere. They're often accompanied by coronal mass ejections (CMEs), where bubbles of magnetic fields and matter – primarily electrons and protons, but with very small traces of elements like helium and oxygen – shoot out of the sun. These particle ejections are more worrisome than the radiation from flares; once trapped in Earth's magnetic field, they can induce massive electrical currents in the ground below that can flow into power lines.

Solar flares are classified by the brightness of the X-rays they emit – A, B, C, M, and X. The strongest and most powerful one is the X-class. While M-class flares can sometimes cause brief radio blackouts on Earth's poles – an X-class flare could potentially cause radio blackouts across the entire world, and create severe radiation storms in our upper atmosphere.

We have had several M-class flares in the recent past, letting us know that the sun is just clearing its throat – getting ready for the big cough.

When aimed directly at Earth, X-class solar flares can pose a risk to astronauts and satellites in orbit, as well as interfere with communications and GPS signals on the ground. It could give airline passengers and astronauts/cosmonauts small doses of radiation. [Include Taikonauts in that list now, Hi]

And of course, they super-charge Earth's northern lights displays by bombarding the planet with solar particles, triggering awesome aurora light shows in the polar regions.

The disruption would also kill a lot of people -- some quickly, as medical devices failed, others later as food supplies and clean water became scarce. Without electricity, pretty much everything in our civilization comes to a stop. The economic damage would be incalculable.

We don't know how common such events were, since they probably wouldn't have made much of an impact in pre-industrial years. But in 1989 a smaller flare wiped out electricity in Quebec, leaving many Canadians without power for an extended period. And similar flares have been near misses -- a Class X flare (the most powerful kind) – a superstorm - just missed our planet – sideswiping the earth back in May. There was a radio blackout for about two hours.

Space is huge and the Earth is tiny, so most of these will miss us completely. But the consequences of being hit are quite serious. Let's keep our fingers crossed!

by VU2TS

THE COCKROFT-WALTON VOLTAGE MULTIPLIER

by R. Jayaraman, VU2JN

Introduction:

This is an interesting voltage multiplier circuit that can be used to generate any high DC voltage at low current drain from a lower voltage AC supply, without using transformers or other complicated circuitry. It was first presented by Cockroft J.D. and Walton E.T.S. in the Proceedings of the Royal Society, London in 1932. However, the circuit appears to have been originally developed as early as 1919 by a Swiss physicist Heinrich Greinacher, but remained unnoticed.

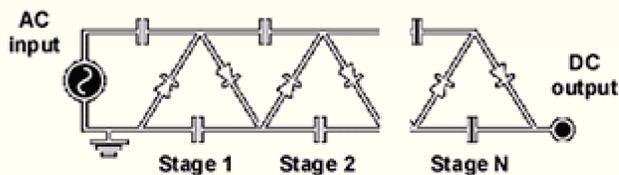


Fig.1. Cockroft-Walton Voltage-multiplier Chain

Fig.1 shows the circuit of a N-stage Cockroft-Walton voltage multiplier chain. If the AC input voltage is E_{rms} , this circuit gives, at low currents, a DC output of

$$2 \times E_{peak} \times N \text{ volts, where } E_{peak} = 1.414 \times E_{rms}.$$

Though the circuit looks deceptively simple, it is not that easy to explain. Referring to Fig.1, the capacitors on the top leg have a DC voltage across them with superposed AC surging through them. The capacitors on the bottom leg have only the DC voltage of $2 E_{peak}$ across them.

Any number of stages can be added to the circuit, and each additional stage raises the output voltage by $2 E_{peak}$. The beauty of the circuit is that, irrespective of the number of stages, all the diodes and capacitors used need have a voltage rating of only $2 E_{peak}$. Because of this reason, the Cockroft-Walton voltage multiplier is easy to build, and is used extensively in High-energy Physics, Lightning Research etc.

Fig.2 shows the picture of an impressive very-high-voltage DC generator assembly based on the Cockroft-Walton voltage-multiplier chain that is on display in the Science Museum, London. It was used in the research that led to the development of the atom bomb.

Most of us get no opportunity to work on high-voltage generators, so let us at least

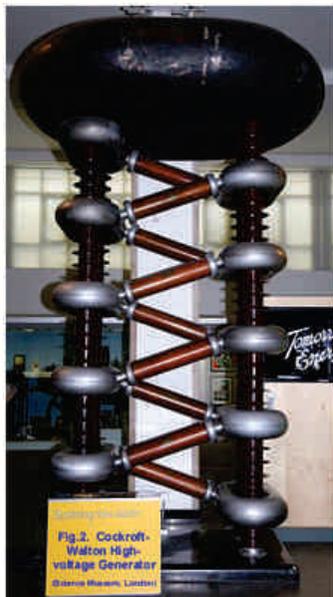


Fig.2. Cockroft-Walton High-voltage Generator
Science Museum, London

Contd.

have some fun assembling a minimal version of such a generator.

Fig.3 shows the circuit of a simple 2-stage Cockroft-Walton voltage-multiplier DC supply that employs just four 1000 PIV silicon rectifiers and four $1 \mu F$ paper capacitors rated at 250VAC/600VDC. The neutral line of the 230-volt mains supply is the base-line for the voltage multiplier. Every power supply providing a

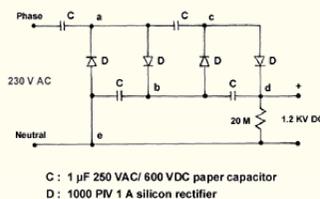


Fig.3. Cockroft-Walton 2-stage Voltage-multiplier Circuit

DC output must have a closed DC path and, in Fig.3, it is 'abcdea'.

Fig.4 shows the unit assembled in breadboard fashion on a 6"x4" epoxy board. With an input voltage of 230VAC, this circuit gives an output of 1240VDC. To measure the output voltage at A, measure the voltages between N & O and O & A (using a 20,000 ohms/volt multimeter in the 1000VDC range), and add up. The 20-megohm load on the output (two 10-megohm 1-watt resistors in series) discharges the



Fig.4. Cockroft-Walton Voltage-multiplier Unit

capacitors after the unit is switched off. High-value 0.5-watt resistors have a tendency to change their resistance even with moderate heating up, so 1-watt resistors are used.

This little gadget would be very useful in an experimenter's shack for testing 1000PIV silicon rectifiers and 1KV mica or ceramic capacitors (especially the military-disposal capacitors commonly used by amateur experimenters). For such tests, connect one end of the capacitor or the cathode of the rectifier to A (using the screws on the ceramic-mounted terminal). With the multimeter in the 1000VDC range, connect its black lead to the terminal at N. Then turn on the Voltage multiplier and touch the free end of the device with the red lead of the multimeter. A steady reading close to zero indicates that the device is good.

It goes without saying that the builder should assemble and handle a high-voltage gadget like this with due caution. The phase and neutral lines of the circuit should be correctly wired to a 3-pin mains plug.

Reference – Wikipedia: Cockroft–Walton generator.

■ VU2JN, March 2013.

[Back in the late seventies, I wanted to make negative-ion generators for indoor air-pollution control, and I was looking for a ways to economically produce voltages above 3.5 KV. With the help of fellow hams such as VU2ZAP, VU2RQ, VU2OZ, and VU2VO (SK) who gave me useful tips, I successfully made the gizmo using the above circuit, and marketed it. I used the then popular 1N4001 diodes and 0.5 mfd paper capacitors. The circuit was good for voltages up to ~6 KV. However, with increased stacking, the corresponding increase in voltage dropped. Ed.]

CCXD - the ultimate award

The **Cabooture Radio Club** in VK4, has just launched the ultimate award – the **CCXD Award**.

Here is an award for the Globe-trotting DXpeditioner. For those who have helped so many to achieve DXCC, there is now the opportunity to achieve the ultimate accolade, membership of the most prestigious and exclusive club in Amateur Radio - CCXD – **The Century Club of eXtreme Difficulty**.

It is no coincidence that CCXD is DXCC in reverse.

To achieve DXCC you need to work 100 countries from your home country.

To achieve CCXD you need to work your home country from 100 DX countries.

At the time of writing, no applications have been received, Hi Certificate number 1 is awaiting presentation. Will you be the first to receive this honour?

For more information visit our website www.vk4qd.net

Peter VK4QC

California Radio Hams claim 77 GHz world record

The ARRL report mountain-topping radio amateurs in California are claiming a new world distance record on the 77 to 81 GHz band.

The claimed record was set June 13 between **Robert Johnson, KF6KVG**, on a peak just east of San Jose and **Goran Popovic, AD6IW**, in Kings Canyon National Park to the east-southeast.

“We achieved a distance of **252.49 km** from Mt Hamilton (CM97di) to Kings Canyon National Park (DM06ms),” Goran, AD6IW, announced on the 50 MHz & Up Group reflector. “We made two-way contact on FM and SSB with strong signals at both ends.”

KF6KVG used a 1-foot dish, and AD6IW a 2-foot dish. Both employed dielectric resonator oscillator-locked frequency control for extreme stability. The current E band record is 228 km, set in Germany between Philipp Prinz, DL2AM, and Alexander Wetzl, DL2GWZ.

According to ARRL CEO David Sumner, K1ZZ, this amateur band was first allocated internationally in 1979 as 75.5-81 GHz, with 75.5-76 GHz primary and the remainder secondary.

When allocations below 76 GHz were realigned at WRC 2000, 75.5-76 GHz was deleted, 81-81.5 GHz was added as secondary, and the primary allocation was shifted to 77.5-78 GHz although only 77-81 GHz is available currently to amateurs in the US.

Sumner says the band 77.5-78 GHz is under consideration at WRC 2015 for an allocation for automotive short-range radar, leaving the fate of the amateur primary allocation uncertain.

APACHE LABS LAUNCH SDR - ANAN-100D – INDIA'S FIRST HF SOFTWARE DEFINED RADIO.

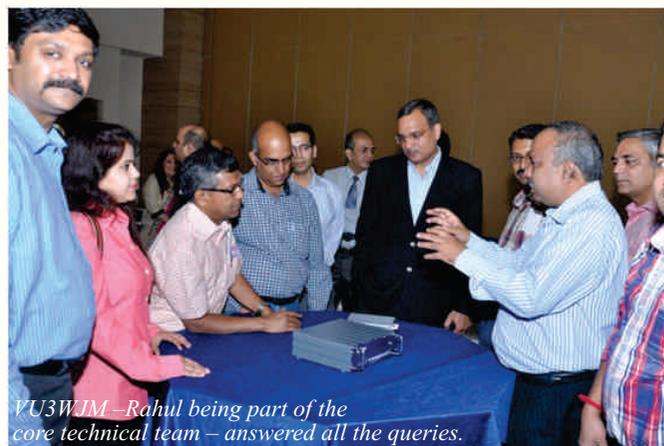
Apache Labs launched ANAN-100 D - India's First HF Software Defined Radio on 18 March 2013 in Gurgaon – the Millennium City of India . The highly sophisticated State-of-the-Art ANAN-100 D, was unveiled by Mr. Sanjiv Nair (IAS), Principal Secretary (Planning), U.P. and Dr. Raju Sharma, Former IAS, amidst the presence of Electronics & Radio Communication Engineers and Radio Hams from Delhi-NCR.

Ms. Manila Sarkaria, Head of Legal & India Operations at Apache Labs Private Limited, welcomed all and introduced the dais.

Abhishek Arunoday Prakash, Managing Director at Apache Labs Private Limited, applauded the technical team including VU3WJM (Rahul) and apprised the specifications of ANAN-100 D, which matches the international standards.

Mr. M. B. Singh (VU2MB), represented the Indian Amateur Radio Community on dais. While comparing the old time radio technology and SDR, VU2MB stressed on the importance of Ear in conventional radio technology with importance of Vision in SDR as everything would be visible on monitor of the personal computer.

During the closing session, participating hams showered many queries pertaining to the newly launched SDR ANAN-100 D.



VU3WJM – Rahul being part of the core technical team – answered all the queries.

The hams present were VU2ATN, VU3UUU, VU3VUV, VU2MUE, VU2NTT, VU2RTV, VU3BSE, VU2OEC.

SPECIFICATIONS OF ANAN-100D

The Heart of the ANAN-100D is the Angelia SDR:

ANGELIA is a state-of-the-art soft core uP 4th generation DDC/DUC, Hermes-like, transceiver board that incorporates an Altera Cyclone IV FPGA and dual LTC2208 ADCs. The large FPGA and dual ADCs permit exceptional versatility and performance. The FPGA is large enough to allow on-board, soft-core processing, if desired, and the dual ADCs allow true coherent receiver operations.

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Highlights:

- 100W RD100HHF1 Based 160M - 6M rugged Linear amplifier
- Rugged Extruded aluminium housing, Weight: 4.5Kgs approx,
- Dimensions: 265.5mm (W) x 220mm (D) x 80mm (H)
- Combination of 7 LPF and 5 HPF Banks for front end Filtering (User Configurable as well)
- 6MLNA
- Dual Phase Synchronous LTC2208 16 Bit ADCs
- Large 115K (EP4CE115) Cyclone IV FPGA
- Supports 7 High performance Independent Receivers on a single ADC
- Supports 2 Coherent Receivers using independent ADCs/antennas for beam forming/diversity
- FPGA has enough space to add on multiple soft core processors for standalone operation
- Onboard 128MB Flash
- Onboard 32Mbit Synchronous RAM

These SDR transceivers costs are :

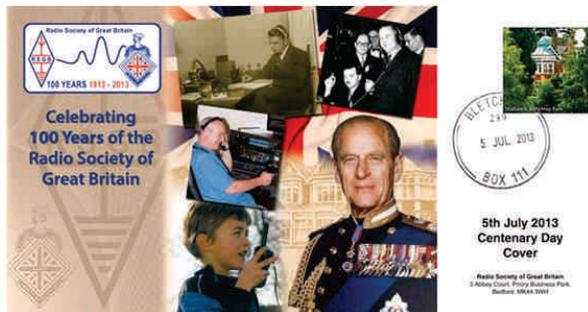
The details of other HF products of Apache Labs Private Limited can be seen on <https://apache-labs.com/>

[Tnx: VU2OEC]

CENTENARY OF RSGB

A commemorative first day cover was issued on 5th July to mark the Centenary of the **Radio Society of Great Britain**, the body that represents Britain's radio amateurs.

The cover being released through Bletchley Stamp Art features the Duke of Edinburgh against a montage of vintage and modern images. The stamp is Royal Mail's "Station X" with a Bletchley Park Post Office cachet. This bears the early code number for Fenny Stratford post office and the undercover PO Box 111 address for Bletchley Park. The newly restored RSGB 'hut' at Bletchley Park provides the link to the cover design and stamp choice. The exhibit offers visitors a fascinating insight into the world of radio.



[Tnx: Southgate ARC]

CQ NEWS (Press Release - 2013 Hall of Fame Inductees).

CQ magazine has announced its 2013 Hall of Fame inductees, adding two members each to the CQ DX and Contest Halls of Fame along with eight new members of the CQ Amateur Radio Hall of Fame.

The CQ Amateur Radio Hall of Fame honors those individuals, whether licensed hams or not, who have made significant contributions to amateur radio; and those amateurs who have made significant contributions either to amateur radio, to their professional careers or to some other aspect of life on our planet. The 2013 inductees (listed alphabetically) are:

- * Evelyn Garrison, WS7A (SK) - amateur radio industry leader
- * Joel Kleinman, N1BKE (SK) - former Managing Editor of QS magazine
- * Laurie Margolis, G3UML/GPC3L - Longtime BBC correspondent and contributor to amateur radio magazines
- * Michael Owen, VK3KI (SK) - Longtime president of the Wireless Institute of Australia and chairman of IARU Region 3
- * Harry Rubinstein (ex-9EEV) (SK) - Inventor of the printed circuit, the slider potentiometer and the combination potentiometer/on-off switch
- * Walker Tompkins, K6ATX - Journalist, author and historian, his three dozen books included several well-known ham radio-related novels
- * Joe Walsh, WB6ACU - Rock music performer and Rock & Roll Hall of Fame inductee
- * William G. (Bill) Welsh, W6DDB (SK) - CQ Novice Editor for 20 years; responsible for helping thousands to get their ham licenses

CQ DX and Contest and DX Halls of Fame

The CQ DX and Contest Halls of Fame honor those amateurs who not only excel in personal performance in these major areas of amateur radio but who also "give back" to the hobby in outstanding ways.

The 2013 inductees to the CQ DX Hall of Fame are:

- * Vladimir Bykov, UA4WHX/AC4LN, has visited and operated from over 100 DX entities in the past ten years and operated from all six continents in 2012 alone. Has provided over 700,000 DX contacts for hams around the world (and QSLed them all).
- * Robert "Gary" Dixon, K4MQG, is a founding member of the Carolina DX Association and as Founding President of INDEXA, the International DX Association, which has helped support over 200 DXpeditions in the past 30 years.

The 2013 inductees to the CQ Contest Hall of Fame are:

- * Dale Green, VE7SV, is a world-class contester who has been hosting teams of new and experienced contesters at his superstation for the past 20 years, and recently helped start a contest group in Chile.
- * Charles "Chas" Fulp, K3WW, also a multi-award winning contester and past president of the Frankford Radio Club (FRC), which says Chas "is our role model and sets the standard for other FRC members to strive to achieve."

Formal inductions to the CQ Contest and DX Halls of Fame were scheduled for the Dayton Hamvention.® More detailed descriptions of inductees appears in the official announcement in the July 2013 issue of CQ magazine.

D-STAR COMMUNICATIONS— some basic information



D-STAR (Digital Smart Technologies for Amateur Radio) is a digital voice and data protocol specification developed as the result of research by the Japan Amateur Radio League to investigate digital technologies for amateur radio. While there are other digital on-air technologies being used by amateurs that have come from other services, D-STAR is one of the first on-air and packet-based standards to be widely deployed and sold by a major radio manufacturer that is designed specifically for amateur service use.

Other non-digital voice modes such as amplitude modulation, frequency modulation, and single sideband have been widely used since the first half of the 20th century. By comparison, digital D-STAR signals offer clearer signals and use less bandwidth than their non-digital counterparts.[1] As long as the signal strength is above a minimum threshold, and no multipath is occurring, the quality of the data received is better than an analog signal at the same strength.

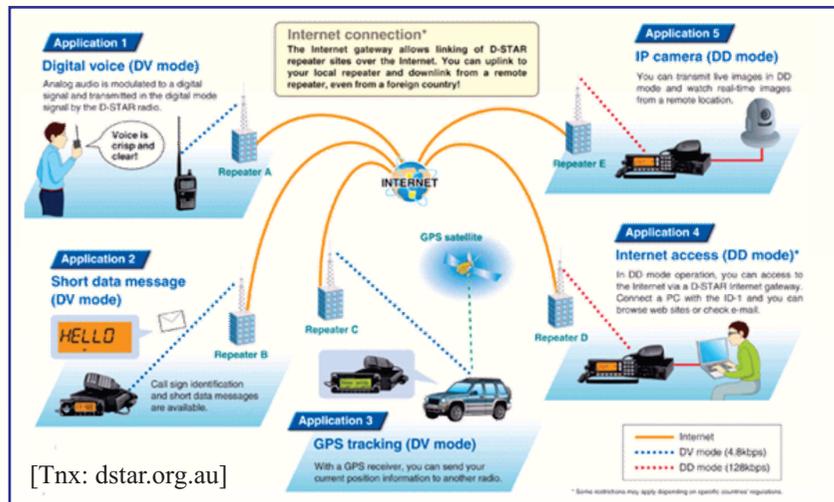
D-STAR compatible radios are available on VHF, UHF, and microwave amateur radio bands. In addition to the over-the-air protocol, D-STAR also provides specifications for network connectivity, enabling D-STAR radios to be connected to the Internet or other networks and provisions for routing data streams of voice or packet data via amateur radio callsigns.

The D-Star repeater system is typically composed of a repeater controller, 1.2GHz, 70cm and 2mtr digital voice repeater, digital data repeater and the Internet gateway PC (Some might use a 10GHz relay). The D-STAR system repeater can perform multiple relay functions as shown in the diagram below.

The D-Star repeater operates similar to existing analog repeater. That is a simple relay of transmit and receive communication within or across the 2m, 70cm or 23cm bands.

When D-Star repeaters are connected with the Internet gateway, the D-Star system relays the received data over the Internet. Your message will get through virtually to anywhere in the D-Star system.

The first manufacturer to offer D-STAR compatible radios is Icom. As of February 1, 2013, no other amateur radio equipment manufacturer has chosen to include D-STAR technology in their radios. The technology requires the use of a proprietary AMBE Codec that is owned by Digital Voice Systems, Inc.



The system today is capable of linking repeaters together locally and through the Internet utilizing callsigns for routing of traffic. Servers are linked via TCP/IP utilizing proprietary "gateway" software, available from Icom. This allows amateur radio operators to talk to any other amateur participating in a particular gateway "trust" environment. The current master gateway in the United States is operated by the K5TIT group in Texas, who were the first to install a D-STAR repeater system in the U.S.

D-STAR transfers both voice and data via digital encoding over the 2 m (VHF), 70 cm (UHF), and 23 cm (1.2 GHz) amateur radio bands. There is also an interlinking radio system for creating links between

systems in a local area on 10 GHz, which is valuable to allow emergency communications oriented networks to continue to link in the event of internet access failure or overload.

Within the D-STAR Digital Voice protocol standards (DV), voice audio is encoded as a 3600 bit/s data stream using proprietary AMBE encoding, with 1200 bit/s FEC, leaving 1200 bit/s for an additional data "path" between radios utilizing DV mode. On air bit rates for DV mode are 4800 bit/s over the 2 m, 70 cm and 23 cm bands.

In addition to DV mode, a high speed Digital Data (DD) mode can be sent at 128 kbit/s only on the 23 cm band. A higher-rate proprietary data protocol, currently believed to be much like ATM, is used in the 10 GHz "link" radios for site-to-site links.

Radios providing DV data service within the low-speed voice protocol variant typically use an RS-232 or USB connection for low speed data (1200 bit/s), while the Icom ID-1 23 cm band radio offers a standard Ethernet connection for high speed (128 kbit/s) connections, to allow easy interfacing with computer equipment.

A NEWBIES GUIDE TO D-STAR is available free at this [LINK](#)

If the link doesn't work for you, try copy-&-paste: <http://www.emdrc.com.au/pics/DStar/Newbies%20Guide%20to%20D-Star.pdf>

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Arctic and Antarctic info needed

John, KL7JR, is requesting that if you or any of your radio friends, SWL or Ham operators, have worked or heard any Arctic or Antarctic stations, he would love to hear from you for his monthly Arctic and Antarctic DX column which goes to CIDX (Canadian Int'l. DX Club) for publication in the monthly "Messenger".

Scanned copies of QSLs or reception reports from anywhere north of 60 degrees or the Antarctica are also welcomed.

KL7JR@yahoo.com

AMSAT Fox-1 launch date announced



NASA announced on May 13, 2013 that AMSAT's **Fox-1** spacecraft has been assigned for launch in 2014 on the ELaNa XII mission.

The expected orbit is 470 x 780 km at 64 degrees inclination. This orbit has a lifetime of about 11 years.

AMSAT Vice President

Engineering, **Tony Monteiro, AA2TX**, reported that the software development team successfully brought up the Fox-1 system software on the Internal Housekeeping Unit (IHU). The IHU is the brains of the Fox-1 satellite and it has a 32-bit, STM32L microprocessor. The operating IHU card was shown in the AMSAT Engineering booth at the Dayton Hamvention.

The Fox-1 Engineering Team will deliver the satellite for integration with the launch vehicle during May, 2014 with the launch scheduled for

President **Barry Baines** says, "AMSAT's focus on STEM education and development of a cubesat platform capable of flying a science mission with a reliable communications link resulted in the selection of Fox-1 in the third round and RadFxSat (Fox-1B) in the fourth round of NASA's Cubesat Launch Initiative."

All Fox cubesats are designed to host advanced science payloads to support future science missions that help us to continue qualify for NASA ELaNa (free) launches. The Phase 1 Fox satellites are 1-Unit CubeSats. They each include an analog FM repeater that will allow simple ground stations using an HT and an "arrow" type antenna to make contacts using the satellite. This was the mode made so popular by AO-51. The Phase 1 CubeSats also have the capability of operating in a high-speed digital mode for data communications.

Phase 2 Fox satellites will include software-defined-transponders (SDX) like the one tested on ARISSat-1. These will be able to operate in a wide variety of analog and digital communications modes including linear transponders. Since this requires more power for reliable operation, these will probably all be 3-Unit CubeSats.

Watch the AMSAT Journal and the AMSAT web (<http://www.amsat.org>) page for more news and details.



ISS Update

Three new Expedition 36 crew members - NASA astronaut Karen Nyberg, Russian cosmonaut Fyodor Yurchikhin/RN3FI and Luca Parmitano / KF5KDP of the European Space Agency lifted off from the Baikonur Cosmodrome in Kazakhstan on May 8, en-route to the International Space Station.



Nyberg, Yurchikhin and Parmitano will join NASA astronaut Chris Cassidy/KF5KDR and Russian cosmonauts Alexander Misurkin and Pavel Vinogradov/RV3BS, who arrived at the station in March. These six crew members will comprise Expedition 36 for the next several months.

Expedition 36 also will add several key investigations to more than 1,600 experiments that have taken place so far aboard the station.

Now Israel is on 5 MHz - with 8 channels

The Israeli regulator - the Ministry of Communications - (IMOC) has decided to grant 5 MHz/60m temporary permission on an individual application basis.

8 Channels are available to General and Extra Class licence holders.

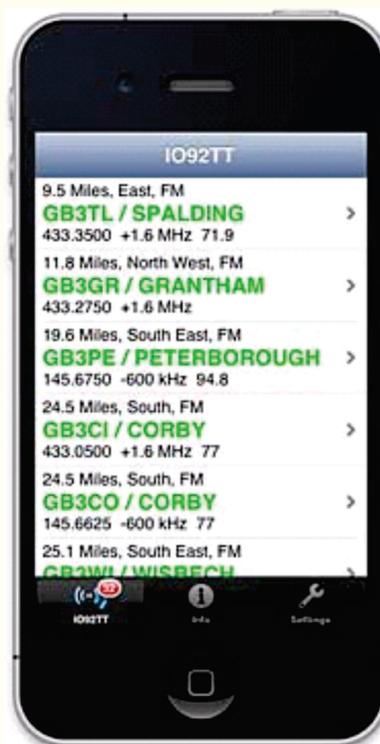
The channels are as per the list below (the number represents USB dial frequency) - for CW 1.5 kHz above. There is some flexibility on Digi modes with 2500 Hz out of the 3kHz channel width. No split operation

Channel 1	5298.5	USB CW RTTY PSK
Channel 2	5330.5	USB CW
Channel 3	5357.0	RTTY PSK CW USB
Channel 4	5366.5	USB CW RTTY PSK
Channel 5	5371.5	USB
Channel 6	398.5	CW USB RTTY PSK
Channel 7	5403.5	USB RTTY PSK CW
Channel 8	5407.0	USB RTTY PSK CW

Power - 100W PEP measured at the TX (not EIRP) Amos, 4Z1AB, the President of the Israel Amateur Radio Club concluded his news by saying "We are all excited to work 60 metres with the ham community - wishing all 73 and 'Shalom' from the Holy Land"

Let's hope VU hams receive permission to use 5 MHz too!

Here's something for the iPhone iPad users: Repeater Locator for iPhone/iPad



The free Repeater Directory App for the UK, Europe, Australia, New Zealand, South America and more is now available for iPhone and Android (Repeater)

Repeater Locator enables you to easily find repeaters across the UK, Europe, Australia, New Zealand, South Africa, South America and more for free, and without a network connection.

Just search for ZBM2 on Apple App Store or Play store

- Complete database of UK Analog, IRLP, Echolink and D-Star repeaters.
- Growing database for - Argentina, Austria, Australia, Belgium,

Brazil, Cyprus, Cayman Islands, Czech Republic, Finland, Germany, Guernsey, Hungary, Iceland, **India**, Ireland, Isle of Man, Italy, Jersey, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, San Marino, Slovak Republic, Spain, South Africa, Sweden, Switzerland, Tasmania...

- Support for English, Argentinian, Catalan, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Polish, Slovak, Spanish and Swedish languages (Android version).
- Use network, GPS or a Locator to find Repeaters.
- No network connection required.
- Displays your locator.
- Comprehensive selection and sorting options.
- Displays distance, heading and full repeater details.
- Fast and flexible, designed to help Amateur (Ham) radio operators use the Repeater network.
- Android version - Supports BlueCAT - FT-857 / FT-817 Bluetooth CAT interface - Touch a repeater to instantly set your radio.

[This is not an advertisement]