



# Amateur Radio

## Promotional activities by Vigyan Prasar

To impart Science & Technology Skills in the field of  
Electronics & Telecommunication

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**BRICS** SCIENCE  
POPULARIZERS FORUM



Vigyan Prasar

Moscow, Russia Conference 2021



The governmental agencies  
have their own radio  
communication channels already  
existing

**-The Police-**

**-Armed Forces-**

**-Para-military Forces**

**-Fire Department-**

**-Inland Water Department-**

**-Meteorology Department-**

**-Electricity Department-**



# Not Uncommon !!

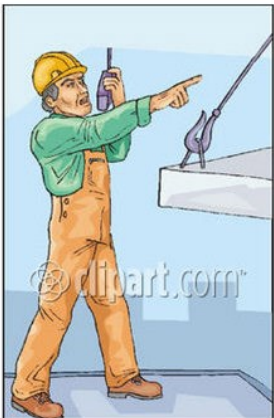
Police/Military/Navy/  
Air force



Two way radio: Listen & Reply

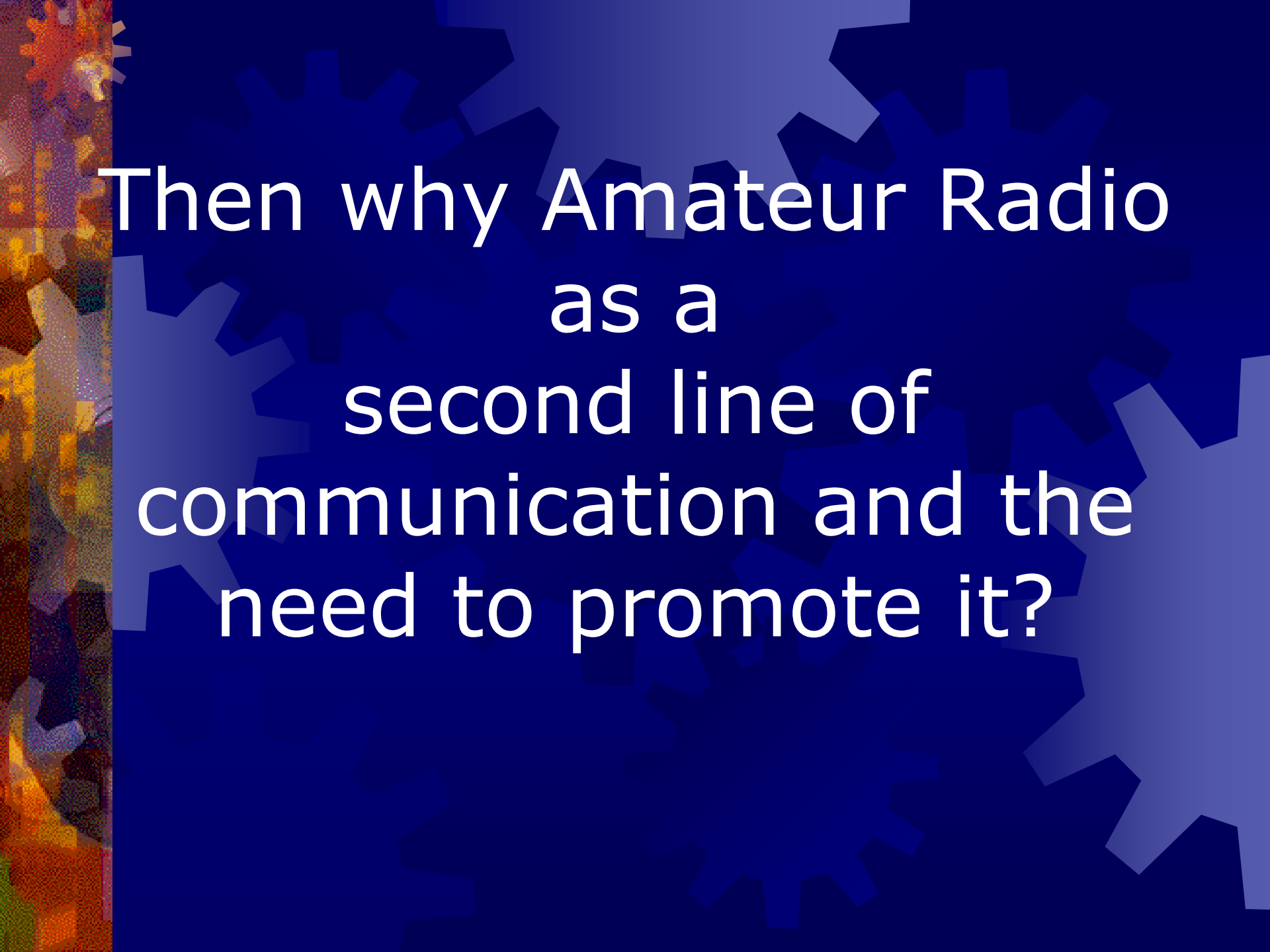


# Police



# Industrial Man





Then why Amateur Radio  
as a  
second line of  
communication and the  
need to promote it?

# Self Reliance/Capacity Building

- Ham Radio (Amateur Radio) is the only scientific activity in the world which requires a licence from the Telecommunication Authority of a country. It is a Do-It-Yourself activity where radio communication experimenters get an authorization to communicate anywhere in the globe. It is a skill more important than any other sports from national security point of view an to build a technically advanced resilient society; this is the reason NASA (USA) promotes it too.
- It is legitimized by ITU (International Telecommunication Union, Geneva) as socially constructive important technical activity and every member country of ITU on principle needs to promote it
- Without promoting it we cannot expect to have engineers with an entrepreneurial bend of mind and to Make in India (not just Make in India) possible.
- 
- Like any other 'Science', it is also 'Science' and the backbone of communication (including science communication)

# Different from other Science Promotional Activity

- Training (extensive theory & practical training)
- Examination (Radio theory & Practice)
- Licencing
- Setting up of a personal two-way radio communication station (Needs individual expertise. So it is tool to learn new technologies unlike just user of a technology)

Needs to get trained in Radio & Electronics (Both Theory and Practical) as per syllabus devised.

A 100 marks exam (Theory+Practical) is conducted by the Ministry of Communications. License is issued after passing of the examination by the WPC wing (Wireless Planning & Coordination Wing) of Ministry of Communications.

# As per Indian Wireless Telegraph (Amateur Service) Rules, 2009

Amateur service' means a service of self-training, inter-communication and technical investigations Carried on by amateurs that is, by persons duly authorized under these rules interested in radio Techniques solely with a personal aim and without pecuniary interest



# 'Ham' – it is a noun (not an abbreviation)

Many people wrongly write it as 'HAM' (correct is 'ham'). It is an English word which is in use since the beginning of the history of radio and telegraphic communication dating back to nearly 172 year

## halfback → ham

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parents are of different races. **half-crown** (or **half a crown**) a former British coin equal to two shillings and sixpence (12½p). **half-dozen** (or **half a dozen**) a group of six. **half-hearted** without enthusiasm or energy. **half-hour** (or **half an hour**) a period of thirty minutes. **half-life** the time taken for the radioactivity of a substance to fall to half its original value. **half measures** actions or policies that are not forceful or decisive enough. **half nelson** a hold in wrestling in which you pass one arm under your opponent's arm from behind while applying your other hand to their neck. **half-term** Brit. a short holiday halfway through a school term. **half-timbered** having walls with a timber frame and a brick or plaster filling. **half-time** (in sport) a short gap between two halves of a match. **not half 1** not nearly. **2** Brit. informal to an extreme degree.

**halfback** noun a player in a ball game whose position is between the forwards and fullbacks.

**halfpenny** or **ha'penny** /hay-pni/ noun (plural **halfpennies** or **halfpence** /hay-p'nss/) a former British coin equal to half an old penny.

**halfway** adverb & adjective **1** at or to a point equal in distance between two others. **2** to some extent.

**halfwit** noun informal a stupid person. ■ **half-witted** adjective.

**halibut** noun (plural **halibut**) a large flat sea fish used for food.

**halitosis** /hali-toh-sis/ noun bad-smelling breath.

**hall** noun **1** (also **hallway**) a room or space inside a front door, or between a number of rooms. **2** a large room for meetings, concerts, etc. **3** (also **hall of residence**) Brit. a university building in which students live. **4** Brit. a large country house.

**hallelujah** /hal-li-loo-yuh/ or **alleluia** /ai-li-loo-yuh/ exclamation God be praised.

**hallmark** noun **1** an official mark stamped on objects made of pure

gold, silver, or platinum. **2** a distinctive feature. •verb stamp an object with a hallmark.

**hallo** ⇒ HELLO.

**hallowed** /hal-lohd/ adjective **1** made holy. **2** very honoured and respected.

**Halloween** or **Hallowe'en** noun the night of 31 October, the evening before All Saints' Day.

**hallucinate** verb (hallucinates, hallucinating, hallucinated) see something which is not actually there. ■ **hallucination** noun **hallucinatory** adjective.

**hallucinogen** /huh-loo-si-nuh-juhn/ noun a drug causing hallucinations. ■ **hallucinogenic** adjective.

**halo** /hay-loh/ noun (plural **haloes** or **halos**) **1** (in a painting) a circle of light surrounding the head of a holy person. **2** a circle of light round the sun or moon.

**halogen** /hal-uh-juhn/ noun any of a group of elements including fluorine, chlorine, bromine, and iodine.

**halt**<sup>1</sup> verb come or bring to a sudden stop. •noun **1** a stopping of movement or activity. **2** Brit. a minor stopping place on a railway line.

**halt**<sup>2</sup> adjective old use lame.

**halter** noun a rope or strap placed around the head of an animal and used to lead it. □ **halter neck** a style of woman's top that is fastened behind the neck, leaving the shoulders, upper back, and arms bare.

**halting** adjective slow and hesitant.

**halve** verb (halves, halving, halved) **1** divide into two halves. **2** reduce or be reduced by half.

**halves** plural of **HALF**.

**halyard** /hal-yerd/ noun a rope used for raising and lowering a sail, yard, or flag on a ship.

**ham**<sup>1</sup> noun **1** meat from the upper part of a pig's leg which is salted and dried or smoked. **2** (hams) the back of the thighs. □ **ham-fisted** clumsy.

**ham**<sup>2</sup> noun **1** an actor who overacts.

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**2** (also **radio ham**) informal **an** amateur radio operator. •verb (hams, hamming, hammed) informal overact. ■ **hammy** adjective.

**hamburger** noun a small cake of minced beef, fried or grilled and typically served in a bread roll.

**hamlet** noun a small village.

**hammer** noun **1** a tool with a heavy metal head and a wooden handle, for driving in nails. **2** an auctioneer's mallet, tapped to indicate a sale. **3** a part of a mechanism that hits another. **4** a heavy metal ball attached to a wire for throwing in an athletic contest. •verb (hammers, hammering, hammered) **1** hit repeatedly with a hammer. **2** (hammer away) work hard and persistently. **3** (hammer something in or into) make something stick in someone's mind by constantly repeating it. **4** (hammer something out) work out the details of a plan or agreement.

**hammerhead** noun a shark with flattened extensions on either side of the head.

**hammock** noun a wide strip of canvas or rope mesh suspended at both ends, used as a bed.

**hamper**<sup>1</sup> noun a basket used for food and other items needed for a picnic.

**hamper**<sup>2</sup> verb (hampers, hampering, hampered) slow down or prevent the movement or progress of.

**hamster** noun a burrowing rodent with a short tail and large cheek pouches.

✓ no p: hamster, not *hamp-*.

**hamstring** noun any of five tendons at the back of a person's knee. •verb (hamstrings, hamstringing, past and past participle **hamstrung**) **1** cripple by cutting the hamstrings. **2** severely restrict.

**hand** noun **1** the end part of the arm beyond the wrist, with four fingers and a thumb. **2** a pointer on a clock or watch indicating the passing of time. **3** (hands) a person's power or control. **4** an active role. **5** help in

## hamburger → handicap

doing something. **6** a person who does physical work. **7** a round of applause. **8** the set of cards dealt to a player in a card game. **9** a unit of measurement of a horse's height, equal to 4 inches (10.16 cm). •verb give or pass something to. □ **at hand** (or on or to hand) near; easy to reach. **from hand to mouth** meeting only your immediate needs. **hand grenade** a grenade that is thrown by hand. **hand in glove** working very closely together. **hand-me-down** a piece of clothing that has been passed on from another person. **hand-pick** choose carefully. **hands-on** involving direct participation in something. **hand-to-hand** (of fighting) involving physical contact. **in hand** in progress. **out of hand** **1** not under control. **2** without taking time to think.

**handbag** noun Brit. a small bag used by a woman to carry everyday personal items.

**handball** noun **1** a game in which the ball is hit with the hand in a walled court. **2** Soccer unlawful touching of the ball with the hand or arm.

**handbill** noun a small printed advertisement handed out in the street.

**handbook** noun a book giving basic information or instructions.

**handbrake** noun a brake operated by hand, used to hold an already stationary vehicle.

**handcuff** noun (handcuffs) a pair of lockable linked metal rings for securing a prisoner's wrists. •verb put handcuffs on.

**handful** noun **1** a quantity that fills the hand. **2** a small number or amount. **3** informal a person who is difficult to deal with or control.

**handgun** noun a gun designed for use with one hand.

**handhold** noun something for a hand to grip on.

**handicap** noun **1** a condition that limits a person's ability to function physically, mentally, or socially.

# Vigyan Prasar promotes it

- As an Alternative Mode of Community Communication empowering people in a specific branch of practical science
- To make the people self-reliant in radio communication technology
- To imbibe and interest in the art and science of radio communication technology
- A Do-It-Yourself activity for school children and students of the technical institutes (to complement theory with practical learning)
- to create a pool of emergency radio communication volunteers

# Vigyan Prasar Promotes it through various outreaching activities: PUBLICATIONS/STUDY MATERIAL



## A Guide to Ham Radio



BE A HAM! TALK TO  
THE WORLD

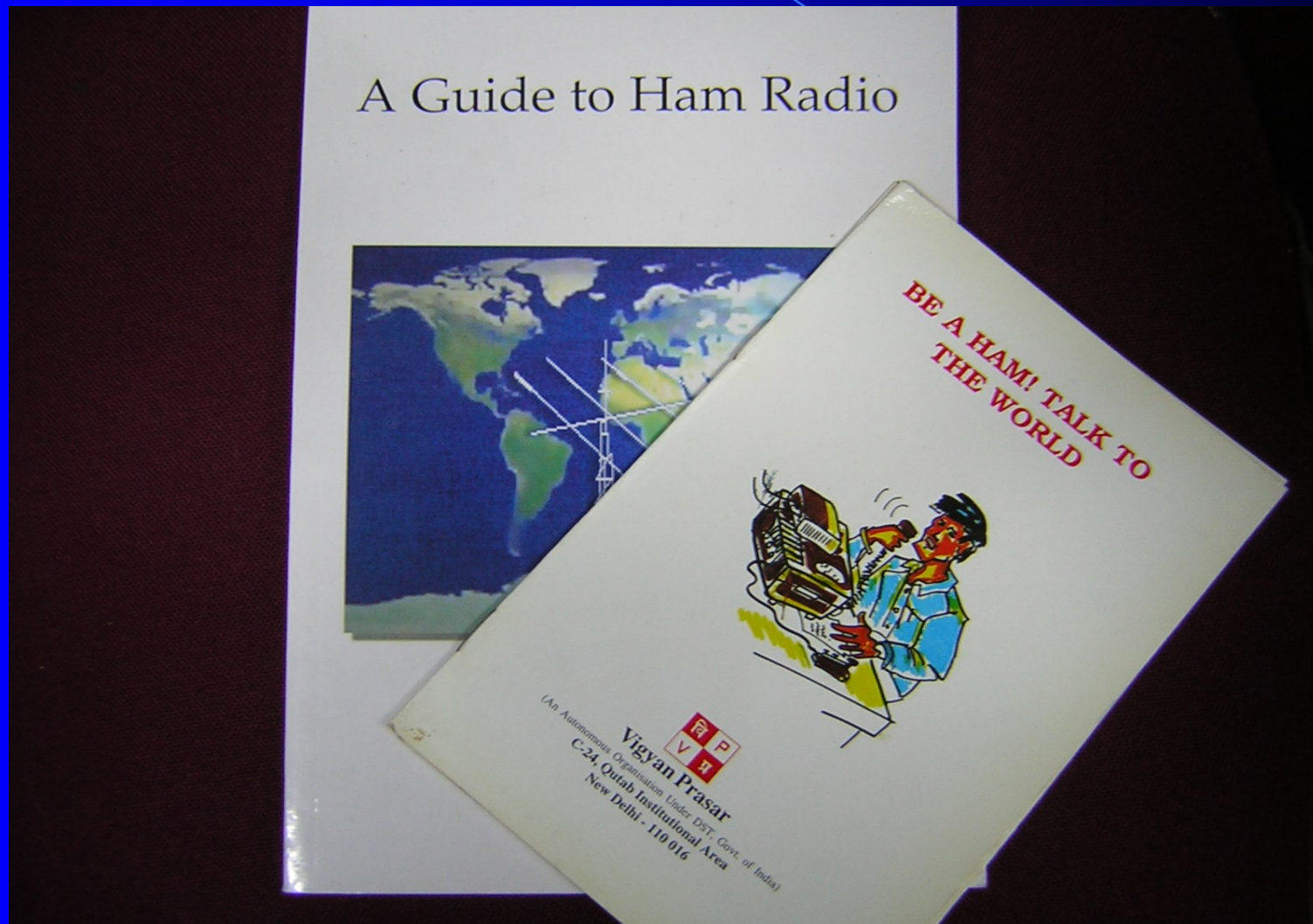


  
Vigyan Prasar  
(An Autonomous Organisation Under 1987, Govt. of India)  
C-24, Outer Institutional Area  
New Delhi - 110016




# “A Guide to Ham Radio”

Published by Vigyan Prasar in 2000



# Through Internet

Address  <http://www.qsl.net/vu2msy/> 

Canon Easy-WebPrint  Print  High Speed Print  Preview  Options  Duplex  View Print List



## Ham Radio for the Wireless Enthusiasts

[| Your First Journey |](#) [| Ham Population |](#) [| Ham Quiz |](#) [| Indian Callbook |](#) [| Search this site |](#) [| Guestbook |](#) [| Ham News |](#)  
[| Homebrewing downloads |](#) [| A Brave Sailor ham |](#) [| APRS \[ NEW \] |](#)

An exclusive site for the ham radio novice

Homepage of Sandeep Baruah, VU2MUE (Ex-VU2MSY)

Indian Rules and Regulations

Study Material for ASOC Examination

FAQ on Rules and Regulation

Homebrewing Zone

LINKS

Support ham radio!

My ham radio shack!

ABOUT VU2MUE!

View the WT Rules Amendment Suggestions

Ham Radio Licencing Application Procedures

**Indian Call-sign Database**

**NEW!** - Update facility incorporated  
[Now you can search by 'Name' also!]

[| 2m Hams in Delhi |](#) [| Visit the Repeater! |](#)

**RESIST THE INVASION OF HAM BANDS :**  
A message from VU2POP

Clandestine Broadcasts in India!



re on ham radio disaster communicatio

**Disaster Communication & Hams**

**CHAT**

 Selected Links!

**Importing an Equipment [NEW!]**

WHAT IS HAM RADIO?

WHAT DOES THE WORD HAM MEAN?

WHAT IS A HAM CALLSIGN?

WHO CAN GO FOR HAM RADIO?

HOW TO BECOME A HAM?

UTILITY OF HAM RADIO

WHAT IS MORSE CODE?

ORGANISATIONS PROMOTING HAM RADIO

DEFYING HAM RADIO OPERATORS

Download a Morse Code Learning Software!  
[\[A software by Tony Lacy\]](#)

LISTEN TO THE MORSE CODE  
(To Download: Right Click > Save Target As..)

**READ MORE ARTICLES ON HAM RADIO!**

New: Basic Electronics Course (Study Material)

LINKS to Other ham radio sites

Comments on ham radio




1999



# Ham Radio Technology Demonstration Page

## Introducing digital modes of communication

Address  <http://www.vigyanprasar.gov.in/ham/aprs/>

Canon Easy-WebPrint  Print  High Speed Print  Preview  Options  Duplex  View Print List

### Live RF data on an interactive Internet map

[Live RF Feed via [VU2NCT](#) on 144.800 MHz]

This page demonstrates the ham radio capability in penetrating the Internet to serve useful purposes. This is a live APRS data feed page.

APRS® stands for Automatic Position Reporting System. **But this is not to be mistaken just as a mere automatic vehicle tracking system.** It is real-time two way digital radio communication where many of the vital information are exchanged almost automatically. Non-hams can monitor ham radio APRS digital communication using this page.

To just get a feel of how APRS activity is going on at other parts of the world here are a few links:

| [AE5PL](#) | | [WA4DSY](#) | | [SV1CNS](#) | | [HB9PVI](#) |

### Radio & Beyond!

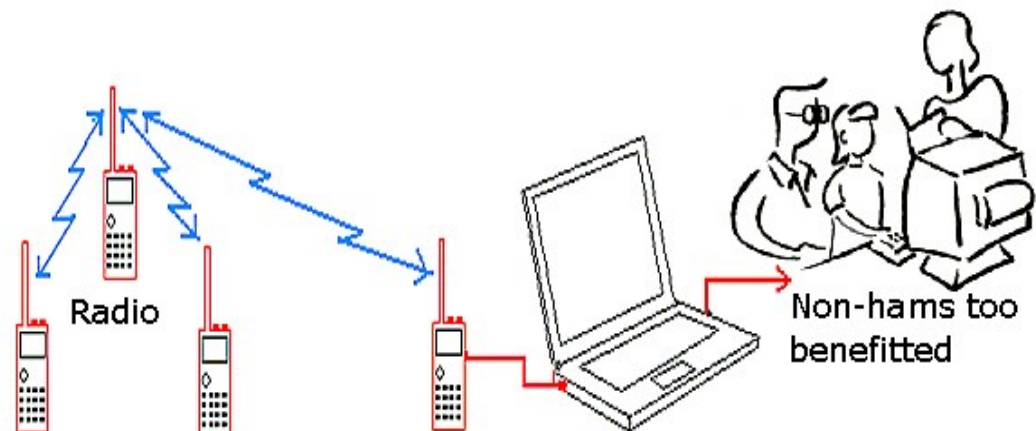
On the New Delhi map displayed below, we can see hams doing APRS® communication [If they wish they may talk or otherwise exchange APRS digital data using their radios]. If they transmit **APRS digital data** on **144.800 MHz** [which is [VU2NCT](#) APRS frequency], an APRS ready radio [[Kenwood TH D7 AG](#)] hooked to the Internet at



### New Delhi APRS® Demo page

[What is APRS?](#)	[APRS benefits](#)	[Why javaAPRS?](#)	[Map use instructions](#)
[Map Commands](#)	[hams get UI-VIEW](#)	[APRS Presentations & Lectures](#)	
[APRS Resource Collection](#)		[Monitor Text Messages](#)	

APRS® is the Registered Trademark of Bob Bruninga WB4APR US Naval Academy



# In 2005 CBSE incorporated ham radio in its frontline curriculum on Disaster Management in Social Science (Class X)

## *Together Towards a Safer India Part III*

### *A Stride Ahead*

*A Textbook on Disaster Management for Class X*



**CENTRAL BOARD OF SECONDARY EDUCATION**

PREET VIHAR, DELHI - 110062

## 4. *Alternative Communication Systems... during disasters*



In Monsoon-2004, severe flood situations in the States of Assam and Bihar caused major devastation. Many district head quarters got totally cut-off from the State head quarter and neighboring districts due to submerged telephone exchanges or damaged cables and disrupted roads and railways communication. In the worst affected districts the need for relief and rescue operation could not be communicated to the State head quarters. Realizing this, State

Government requested National Disaster Management Division of the Government of India to immediately send the emergency coordination kits containing satellite phones to establish communication links among the severely affected districts and state headquarters.

From the above case study, we see that during any major disaster or emergency situation, the communication links are totally disrupted. Therefore, it is crucially important to have completely functional communication links among Government authorities at various levels to provide adequate assistance to the affected population. This chapter tries to explain various basic telecommunication facilities, need for alternative communication systems during the large-scale natural disaster/emergency situations, and modes of emergency communication systems including satellite based communication systems.



# CBSE incorporated a chapter on Ham Radio in a Class X textbook

<http://www.cbse.nic.in/DM%20ENGLISH.pdf>

communications among the emergency response managers. Such Amateur volunteers provided commendable services during the Orissa super cyclone in 1999 and Gujarat earthquake in 2001.

In efforts to popularize the Amateur Radio in the country and develop a trained force of licensed Amateurs, Department of Information Technology has initiated a nation wide programme to establish Amateur Radio Stations at various places and provide the necessary training for interested Amateur Station Operators.

## SATELLITE BASED COMMUNICATIONS SYSTEMS

Satellite based Communication systems mean communication systems intended for users on the Earth but which have some equipment in space, i.e. a satellite. Different satellites carry out different jobs, such as taking weather pictures or finding accurate positions on earth in terms of latitudes and longitudes. Communications satellites are essentially radio relay stations in space and are sometimes referred to as COMSATS. The other words you may hear are SATCOMS for satellite communications in general and SATPHONE for a satellite phone terminal.

The most important feature of a communications satellite is the transponder - a radio that receives a conversation at one frequency and then amplifies it and re-transmits it back to Earth on another frequency.

### HAM operator helps families connect with tsunami victims

New Delhi, December 28 .The Tribune



An amateur radio enthusiast based in the Capital has succeeded where most government agencies have failed. **Sandeep Baruah**, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair, the capital of Andaman and Nicobar Islands, and has helped relay messages between the people stranded on the island and their families back home.

A  
photograph  
of Sandeep  
Baruah,  
Vigyan  
Prasar was  
featured  
where the  
role of ham  
radio was  
emphasized



### TOGETHER, TOWARDS, A SAFER INDIA PART-III

A textbook on disaster management for class X

FIRST EDITION 2005

REVISED EDITION 2006

© CBSE, DELHI

# Promotional Activities

Lecture and Demonstration  
programmes in  
schools, colleges, technical  
institutes to create an awareness  
about ham radio  
(outreach programme)







# Media coverage of our Outreaching activities



UCOST-Uttarakhand workshop



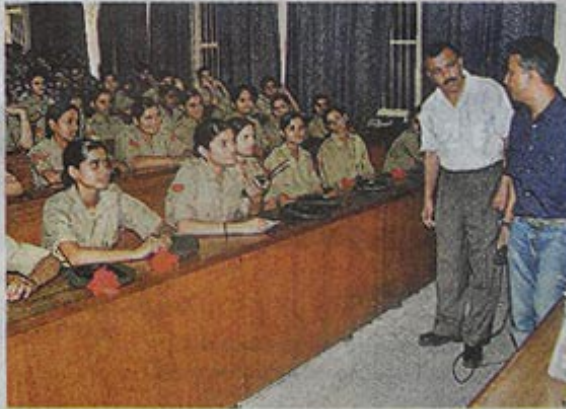
IIT Kanpur workshop



# शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना

भास्कर न्यूज़ | हिसार

हरियाणा कृषि विश्वविद्यालय में चल रहे एनसीसी शिविर में कैडेट्स को गुरुवार को हैम रेडियो का प्रशिक्षण दिया गया। विज्ञान प्रसार केंद्र दिल्ली से आए वरिष्ठ वैज्ञानिक संदीप बरुआ ने सभी कैडेट्स को बताया कि इसके माध्यम से बिना किसी मासिक बिल के फ्री में बात, लाइव चैट, मैसेजों का आदान प्रदान किया जा सकता है।



हिसार. एचएयू में कैडेट्स को हैम रेडियो के बारे में जानकारी देते प्रशिक्षक।

उन्होंने बताया कि हैम रेडियो की एक मात्र ऐसा संचार का साधन है, जो कि हर परिस्थिति में काम करता है। फिर चाहे वह बाढ़ की त्रासदी हो अथवा सूनामी का सफाया। इससे कोई भी आदमी संचार साधनों से जुड़ा रह सकता है। वैज्ञानिक ने अपने प्रयोगों से भी कैडेट्स को परिचित कराया कि किस तरह से वायरलेस सेट के माध्यम से किसी स्थान विशेष का

तापमान जान सकते हैं अथवा वह कितनी दूरी पर किसी एंगल पर है। इतना ही नहीं वायरलेस से सेट कैसे मैसेज भेजा जाए।

किस तरह से आर्क्यूट, याहू के तरीके से लाइव चैट किया जाए। उन्होंने बताया कि यह सब मुफ्त में मिलता है बस इसकी एक ही शर्त है कि इसे उपयोग करने

वालों की संख्या ज्यादा से ज्यादा हो। उन्होंने बताया कि इस समय देश में आबादी अरबों पार कर गई है लेकिन हैम रेडियो का उपयोग 15 हजार से भी कम लोग कर रहे हैं। कई सेलिब्रेटी ने तो हैम रेडियो ले तो लिया है लेकिन इसका उपयोग बहुत कम ही लोग कर रहे हैं।

## कर्मचारियों का प्रदर्शन, ज्ञापन सौंपा



RUSSIA BEYOND



## RCSC lauds Gagarin's pioneering flight and achievements

APR 14, 2016 RIR NATALYA RUDAKOVA



A function was held on April 12 in New Delhi.

RCSC



## CITY BUZZ

# Ham Radio network to be set up in Kaushambi

The Kaushambi Apartments Residents Welfare Association (KARWA), announced a VHF/UHF ham radio repeater network soon to be made functional at Kaushambi under the disaster mitigation plan. An awareness programme and workshop on

ham radio (Amateur Radio) was organised by Kaushambi Apartments' Resident Welfare Association (KARWA) at Nanda Apartments, Ghaziabad on October 11 where children and senior citizens of the area got an opportunity to see the functioning of various ham

radio technologies.

Sandeep Baruah, scientist-D from Vigyan Prasar (Department of Science and Technology, Govt. of India) deliberated a presentation emphasising the need to establish a ham radio and electronics club for the children of the area which will help establishing an alternative radio communication network as a hobby and public service activity.

Various instruments were installed at the roof of the 14th storied Nanda Apartments and its functioning was explained with the help of Vigyan Prasar Repeater Station (VU2DLR) located at South Delhi.

Hams (Amateur Radio Hobbyists) from all over the NCR region participated and assisted the programme by making radio contacts with the temporary ham radio station installed at Nanda apartments. Children were thrilled to exchange pleasantries with senior hams. Francis

During the deliberation, Sandeep Baruah (Scientist-D, Vigyan Prasar, DST) emphasised the formation of the people's own ham radio alternative radio communication network as a 'hobby' and as a 'do-it-your-

their own communication network without depending on other service providers. To establish an effective communication to be functional, it was suggested that several low cost UHF/VHF Ham Cross



Rebello (Ham call VU2XLZ) talked at length to the children via the ham radio setup from his ham radio station located at Green Park. Students were delighted to talk to him via the two-way ham radio communication system. Hams from as far as Gurgaon also came on-the-air to assist the demonstration.

self activity', which would also be useful in the event of any kind of emergency, because when the public telephone network and cellular telephone network break down during large scale disasters, people with ham radio licences and their personal radio communication equipments would be able to maintain

Band Repeater station may be installed on top of all the skyscrapers at Kaushambi. A similar setup was demonstrated to the children. A Ham Radio Club is in the process of formation where hams located near Kaushambi would provide their voluntary support in training the children and other interested people.

Happy Diwali

**श्री Sai Shah**

**FURNITURE & INTERIORS**

SPL. IN: WARD ROBES, ALMIRAHS, MODULAR KITCHENS, DOUBLE BEDS, SHOW CASES, T.V. CABINET ETC.



REEMA GOWALLA

**W**ITH sophisticated tablet computers, smartphones and zillions of social networking sites floating around the Internet, communicating with friends and dear ones does look simple and convenient, but imagine a day when all of these are snapped off in the blink of an eye by a powerful earthquake. That is when an amateur or ham radio comes in handy.

Primarily a recreational activity, amateur radio enables operators — also known as hams — to pick up airwaves to discover a new voice from an unknown land. But it has the potential to be an immensely useful disaster management tool, especially in times of an earthquake, flood, cyclone and even tsunami.

The concept and importance of ham radio — which involves the use of a combined unit of transmitter and receiver, called transceiver, to facilitate a two-way communication between broadcasters across the world — is yet to grab most people's attention. But this does not discourage the small spirited community of operators who consider it a self-training activity involving technical creativity and experimentation with wireless communication.

**Sandeep Baruah** — principal scientific officer at Vileyan Prasar, department of science and technology — explains, "It's their love for radio science and the thrill of communicating with mostly self-assembled electronic devices that keep ham radio operators pursue their interest."

A portable amateur radio set can be operated using batteries and even solar power. And because only specific individuals attempt to connect with each other through radio waves, it hardly fails unlike most wireline services, phone and internet networks, which often fall victim to jammed bandwidth and overloaded routers during natural calamities.

The hobbyists are referred to as amateurs because their systems are not included in commercial broadcasting or similar two-way radio services often used by the defence forces or firefighters.

An avid ham himself, Baruah first established his station at Assam Agricultural University, Jorhat, in 1989. "It is an interesting method to discover new friends and disseminate knowledge among one another. Hams discuss almost everything under the sun, for which they run 'nets' at scheduled times and previously decided frequencies," he says.

Over decades, these enthusiasts have helped to form new industries by significantly contributing to science, technology, engineering and social services. But the crucial role they play during crises and natural disasters deserves special mention.

The techno-tinkers can quickly set up networks, helping speed up disaster relief. The 2004 tsunami cut nearly all communications with the Andaman Islands. Ham operators are not allowed to set up shop there because of security reasons, but a group of enthusiasts on vacation there did manage to get a station up and running. They then transmitted updates about the disaster to authorities in Delhi and other cities.

Baruah himself was in Delhi at the time and among those in touch with this group of hams in the Andamans. He says, "I had received messages from different parts of the country and abroad, which I relayed to those stationed at Port Blair and vice versa."

Hams also supported rescue activities after the 9/11 terror attacks, Gu-

# Hams: Riding the radio waves

This band of original social networkers continues an old tradition of licensed amateur broadcasting



**SAY HELLO:** Sandeep Baruah demonstrating his amateur radio equipment in front of schoolchildren during a workshop.

jarat earthquake in 2001, North America blackout in 2003, Hurricane Katrina in 2005, Sichuan earthquake in 2008 and more recently the 2010 Haiti earthquake.

## Ham hum

Just a simple wire antenna connected to the transceiver is enough to attract ham radio frequencies. Licence bearers work using frequencies internationally allotted to them. If a particular wave is not already being used by another ham, it can be used to give a call to the operator in question.

However, the calling procedure should adhere to international radio regulations.

One can give a general, or CQ, call to all stations around the world with his or her assigned 'call sign' on air to legally spot a specific operator or station.

With advances in the field of electronics and technology, ham radio has also undergone a lot of changes over the years. Like mobile phone users, ham enthusiasts can now send text messages. Operators can even connect their radios to the web. For example, ham equipment connected to the internet in Guwahati can receive messages from other ham radio users in the city, while their conversation can be routed across the world through a system called Echolink.

Digital ham radio is a smart mode of

**ONLY** specific individuals attempt to connect with each other through radio waves, therefore, it hardly fails unlike most wireline services, phone and internet networks, which often fall victim to jammed bandwidth and overloaded routers during natural calamities

communication. Here all details are sorted into standard-sized digital packets, which are then automatically transmitted using radio waves in small bursts. Through 'packet radio', data can be transmitted in various formats including document, image or even video. To send or receive radio mails, hams need to connect their devices to the computer and log on to a local ham radio server. The receiver gets only the correct data, thanks to an automatic error detection system.

For instance, if a transmitted message reads: "Hello, I am now at the rescue camp. So far, 90 people have been evacuated." And if, due to some ham radio wave propagation problem, the signal is weak at the receiver's end, 90 may be digitised or demodulated as 9. But the packet modem has a firmware which is in-

telligent enough to understand that the figure is not accurate, and so the radio connected to the computer will send back automated re-send request to the sender.

One can also send emails with the help of free software called 'Airmail', which functions more or less like Microsoft Outlook and can be useful at remote areas devoid of internet facilities.

Sharing an instance, Baruah says, "I get messages from a sailor ham friend through such a system. He keeps sending stories while on long-distance voyages. He is supported by Winlink 2000, an all-volunteer project that arranges for sending emails through radio."

And there is more: hams can also receive images from space now. NASA launched a low earth orbit satellite recently enabling hams to lift pictures using a handheld transceiver and a tiny beam antenna called Yagi.

ISRO also launched a microsatellite called HAMSAT in 2005, enabling India to become one of the few countries in the world to launch an amateur radio satellite.

## Highs & lows

The story of ham radio starts at the beginning of the history of radio itself. In 1895 when Guglielmo Marconi, beginner of long-distance radio broadcasts began sending signals over vast lengths, he also became the first amateur radio broadcaster. That same year Nikola Tesla also sent transmissions in the US.

Indian scientist Sir J C Bose's experiments also contributed to the cause. Apart from providing voluntary help during national emergencies, hams are also said to have supported the Indian Independence movement.

Ham radio suffered a slowdown during global conflicts, when authorities suspended issuing licences and even asked operators to dismantle their devices fearing misuse of the technology by spies. However after the end of World War II, their number started growing again.

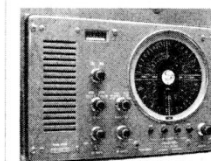
It is sad that despite making significant contributions over the years, little has been done to support the enthusiasts or at least raise awareness about ham radio among the public. Getting a licence is an uphill struggle, and so there are just about 15,000 authorised and practicing ham radio users in India, with a mere seven in the Northeast.

Following repeated petitions, the do-it-yourself activity was incorporated in the Central Board of Secondary Education (CBSE) syllabus in 2006, with occasional workshops being conducted on IIT campuses and other educational institutions across the nation. Hams feel the scope of amateur radio is unlimited and so introducing the activity to youngsters could boost their mental faculties as well as impart a sense of unity and self-empowerment.

The wireless, planning and coordination wing (WPC), which forms part of the ministry of communications and information technology, is the regulatory authority of amateur radio in India. Together with controlling radio waves, the WPC also assigns call signs and issues licences.

Any citizen above the age of 12, and with basic knowledge in electronics and radio science, is eligible to become an authorised ham operator after he

## Frequency facts



■ In the early days of amateur radio, most professional operators would use the term ham to taunt the hobbyists, leading to the popularity of the synonym later on.

■ Rewarding the contributions of amateur radio, a postage stamp was issued in the US in 1964.

■ Fox hunting is an interesting activity in which hams use direction-finding techniques to locate hidden transmitters.

■ Hamfests and DX-peditions are among the countable events conducted on regular intervals to promote amateur radio in India.

■ A deceased amateur radio operator is generally referred to as a silent key.

or she clears a 100-mark exam, conducted by the WPC at various wireless monitoring stations across the country. There are two such stations in the Northeast too — at Dibrugarh and Shillong — but due to concerns over ham radio turning into a security threat if fallen into the wrong hands, the examination has not been conducted in the region over the past few years.

Ritu Mahanta, a guest lecturer at an engineering college near the city, agrees that ham radio is an efficient tool for communicating during emergencies. Unfortunately, his own experience at getting a licence has been unsavoury. He first applied for it in 1990 as a student, but was rejected. Over time, he applied several times, to no avail. He then filed an RTI in 2011. "Today I have the equipment, but can only hear hams communicating. Until I get my own call sign, I cannot transmit," he says.

But enthusiasts here argue that ham radio is a fairly simple set up and any suspicious use can be easily detected with the help of direction finding antennas or the method of triangulation. They feel such irregularities could just be another instance of red-tapism and discrimination.

However it's a different story in most other states outside the region where the density of hams is higher, thanks to special clubs and related activities. Bangalore is also usually called the ham radio capital of India.

The hobbyists think more should be done to promote amateur radio in the region, especially for young citizens, who can serve as a band of communicators when the most active networking tools are knocked out by a natural calamity.



कुछ समय पूर्व प्रतिनियुक्ति पर यहाँ लाने में सफल रहा था। संस्थान के अफसरों का कहना है कि कुछ समय पूर्व ही निगम से कुछ जेई उपलब्ध कराने के लिए शासन से अनुरोध किया गया था। इनके मिल जाने से गर्मियों में बेहतर जलापूर्ति व्यवस्था में मदद मिलेगी।

पास भी ले गए थे। अब इस मुद्दे को लेकर आदती गोलबंद होने की तैयारी में हैं। सरकार से नाराज व्यापारी संगठनों की बैठकों में रणनीति तैयार की जा रही है। ज्यादा गुस्सा अनाज के

नके आदतन नारे प्रसारित कर रहे हैं। शासन के आश्वासन के बाद भी समस्या जस की तस है। आदतियों की ओर से प्रदर्शन के साथ ही हड़ताल पर भी विचार किया जा रहा है।

सत्र आरंभ हो इस दौरान सड़क तक है। कांग्रेस ने दौरान धरना-दिए हैं। पार्टी सुरेंद्र कुमार पर हो रहे व्यवस्था की पर सरकार के महासचिव विन सरकार खामोश विकास कार्य स्कूलों में 10 शिक्षा के लिए उठाएगी। इस प्रदेश महासचिव सदन के बाहर जनमुहों को पूरे डबराल संघर्ष प्रदर्शन करने ध्यानी के अनुस शुरू करने, सति शासनादेश जारी आंदोलनकारियों आदि को लेकर

न्यां

(नियोजन) अनुसार वन इंटैक करने इते हुए यह किन, बजट प्रस्तावित रू नहीं हो मीद है कि लिए खासी जट रिलीज कार्यवाही

पत्र

विनि ने भी वि के लिए है। लेकिन सरकार की है। इन तीनों का प्रस्ताव स्बध नहीं है। बहुगुणा भी खे गए पत्र में काल प्रस्ताव

## युवा महोत्सव के तीसरे दिन पोस्टर प्रतियोगिता आपदा प्रबंधन प्रशिक्षण जरूरी

देहरादून। युवा महोत्सव में वैज्ञानिकों ने आपदा प्रबंधन प्रशिक्षण को बेहद जरूरी करार दिया। युवाओं को आपदाओं से बचाव और संचार के लिए हैम-रेडियो जैसे साधनों के प्रयोग के लिए प्रशिक्षित किया।

प्रादेशिक विज्ञान एवं प्रौद्योगिकी युवा महोत्सव के तीसरे दिन आपदा प्रबंधन पर कार्यशाला में युवाओं को प्रशिक्षित किया गया। डीएमएमसी के निदेशक डा. पीयूष रौतेला ने कहा कि आपदाओं को रोकना संभव नहीं है। लेकिन समुचित प्रशिक्षण के जरिए इनके प्रभाव और नुकसान को कम किया जा सकता है। उत्तराखंड के संदर्भ में आपदा प्रबंधन महत्वपूर्ण विषय है। इसी कड़ी में प्रतिभागियों को हैम-रेडियो का प्रशिक्षण दिया गया। विज्ञान प्रसार के वैज्ञानिक संदीप बरुआ ने हैम-तकनीक की बनियादी बातों की जानकारी दी और हैम-रेडियो का प्रदर्शन किया। आपदा के वक्त अन्य संचार माध्यमों के फेल होने पर हैम-रेडियो से ही संदेशों का आदान-प्रदान संभव है। दोपहर बाद के सत्र में मृदा, जल संरक्षण एवं अनुसंधान संस्थान के वैज्ञानिकों डा. केपी त्रिपाठी और डा. ए रायजादा ने वाटर हारवेस्टिंग और वनीकरण में जल-संरक्षण की भूमिका की जानकारी दी। पर्यावरण शिक्षा संस्थान लखनऊ के वैज्ञानिक डा. गंगवार ने पर्यावरण संरक्षण विषय पर छात्रों को संबोधित किया। इस दौरान 'प्रकृति संरक्षण में विज्ञान का योगदान' विषय पर पोस्टर प्रतियोगिता भी आयोजित हुई। प्रतिभागियों ने मालदेवता पहुंचकर वैकल्पिक ऊर्जा के बारे में जानकारी हासिल की। विभिन्न सत्रों में डा. एसएस साहनी, डा. प्रशांत सिंह, डा. विनोद कुमार, डा. केपी सिंह, डा. एमपी सिंह, डा. संजय भूटानी और भवतोष शर्मा आदि प्रमुख रहे।



प्रशिक्षण : आपदा प्रबंधन के बारे में बताते प्रशिक्षक।

सत्र के

देहरादून। बजट इंतजाम किए गए मीटर की परिधि आरंभ हो रहा है। मुकम्मल इंतजाम अतिरिक्त पुलिस डिफेंस कालोनी में



## Ham radio training in Sikkim

**SE Report**

**GANGTOK, March 9:** A six-day certification training-cum-workshop on Ham Radio started today at Sikkim Science Centre, Marchak. The training programme is being organized by Sikkim State Council of Science & Technology with support from Vigyan Prasar, Department of Science & Technology, Government of India.

The Quick Response Team under State Disaster Management department, teachers, media persons, NGOs and volunteers are undergoing the training programme which will cover in-depth Ham Radio studies, informs a press release.

During the workshop, the participants will also get to know the advance applications of Ham Radio such as packet radio and data transfer using PSK31.

The training programme will be followed by an examination to become certified HAM user which will be conducted by Union Ministry of Communication.

The inaugural session was

attended by Science & Technology principal secretary Anil Mainra as the chief guest.

While welcoming the resource persons and participants, Mainra explained the importance of alternative mode of communication during natural disaster and how it can save several lives if there are trained persons in remote areas to communicate with the help of such device.

He suggested all participants to be serious and take interest during the training so that the State's effort does not go waste.

Scientist Sandeep Baruah from Vigyan Prasar and former State Information Technology secretary Rajesh Verma are the resource persons.

During many of the past large scale disasters all over the world, Amateur Radio Service (Ham Radio) has proved its efficacy in quick dissemination of disaster management information like search and rescue, relief work, tracking of missing person, real-time plotting of vehicles and personnel involved in disaster management and transmission of weather telemetry data.

## Gangtok resident s Mansarovar Yatra

**Staff Reporter**

**GANGTOK, May 9:** An assistant engineer working with the State Rural Development department has been selected to undertake the Kailash Mansarovar Yatra through Nathu La route this year.

Toyanath Sharma (47) from Gangtok would visit Kailash Mansarovar through Nathu La in the fifth batch of the annual pilgrimage. His name was selected after the computerised draw of lots conducted by the Union External Affairs (MEA) ministry in New Delhi on May 6.

Sharma said he is happy but not excited. "I am happy that my name has been listed out in the draw but I am not excited as I have to go through medical test," he told SIKKIM EXPRESS.

A total of 2,482 complete applications, comprising 1948 males and 656 females, were registered for the draw this year. Among them, names of 1,430 applicants have been selected to undertake the yatra starting from June 12.

State Tourism department officials said they are however



**Toyanath**

unaware of Sikkimese shortlisted for

In 2014, pilgrims from Sikkim were selected. The opening ceremony of the motorable route through Nathu La in Sikkim. The following year, an Indian and Chinese pilgrim were selected in 2014. This year, pilgrims are expected to go through Nathu La route.

The Mansarovar Yatra during each year through different routes - the Uttarakhand Pass in Sikkim is open to eligible pilgrims holding valid permits who wish to undertake the yatra for religious purposes.



# Ham radio training for Sikkim concludes

SAMIRNUGO

**GANGTOK, May 14:** The weeklong State-level training on ham radio held at science centre at Marchak near Ranipool came to a close today.

The training programme was organized by Sikkim State Council of Science and Technology and supported by Vigyan Prasar, department of Science and Technology, government of India.

The training which started from May 9 had participants from across the districts comprising of Quick Response Team, members of SSDMA, media persons and NGOs members.

Sandeep Baruah, Scientist-E and the main resource person of the training, imparted technical knowledge on ham radio with the skill of theory and practical.

The valedictory function today had the State Science &



Participants using ham radio sets during the training. SE Pic

Technology principal secretary Anil Mainra as the chief guest accompanied by former secretary Rajesh Verma as a guest of honour.

Mainra urged the participants to make ham radio a hobby as it is useful during the time of emergency. He further appealed all the participants to clear its first

hurdle and possess the license after which the department will provide equipments.

The function also had a power point presentation by Verma, who is also a ham radio operator from Sikkim. He encouraged the participants to become ham operators and to help the people in the time of disasters.

Land Revenue joint secretary Ganesh Khanal urged the trainees to be more dedicated and keep the skill in track. He further stated that the department in consultation with the Science & Technology department will soon start the amateur radio (ham radio) in Sikkim for emergency situations like natural disasters.

The trainees will have to appear and qualify a written exam which would make them eligible for a ham license to be issued by the Union Communication & IT ministry.

Amateur radio (ham radio) is a popular hobby and service that brings people, electronics and communication together. People use ham radio to talk across town, around the world, or even into space, all without the internet or cell phones. Ham radio plays a key role in the time of emergency like floods, earthquake, landslides etc when telecommunication network fails to work.



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### हैम रेडियो से बात करें और मदद भी

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### VP News

VP News

VP News

### How ham radio can be useful during natural disasters

How ham radio can be useful during natural disasters

How ham radio can be useful during natural disasters

### Ham Radio network to be set up in Kaushambi

Ham Radio network to be set up in Kaushambi

Ham Radio network to be set up in Kaushambi

### शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना

शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना

शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना



# हैम रेडियो के वैज्ञानिक उपयोग से बचेगी जान

देहरादून। यूकॉस्ट और ईएमआरआई 108 ने साथ मिलकर शनिवार को विज्ञान प्रसार नोएडा की तकनीकी सहायता से हैम रेडियो पर विशिष्ट व्याख्यान और प्रदर्शन कार्यशाला का आयोजन किया। उत्तराखंड के दूरस्थ क्षेत्रों में मोबाइल नेटवर्क के काम न करने पर विकल्प के रूप में हैम रेडियो के उपयोग की जानकारी दी। कहा कि इसके वैज्ञानिक उपयोग से लोगों की जान बचाई जा सकेगी।

कार्यशाला में विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरुआ ने कहा कि पूरे उत्तराखंड में 2-3 हैम रिपिटर स्टेशन लगाकर यूकॉस्ट की सहायता से बने 32 हैम रेडियो लाइसेंस होल्डर के नेटवर्क से मोबाइल एंबुलेंस, ईएमआरआई कॉल सेंटरों के संपर्क में रह सकती है। कार्यशाला में यूकॉस्ट के वैज्ञानिक अधिकारी डॉ. डीपी उनियाल, डॉ. बीपी पुरोहित, डॉ. आरएस भारद्वाज, जिला समन्वयक डॉ. प्रशांत सिंह, रवींद्र, भास्कर, निर्मल रावत आदि रहे।

देहरादून, रविवार  
31 मई 2009  
देहरादून संस्करण  
वर्ष 9 अंक 24  
पृष्ठ 12  
आमंत्रण मूल्य 1.00 रु

## शाह टाइम्स

ईएमआरआई व यूकोष्ठ ने किया गोष्ठी का आयोजन

### चिकित्सा सुविधा में हैम रेडियो की उपयोगिता अहम्

विशेष संवाददाता  
देहरादून। यूकोष्ठ एवं ईएमआरआई 108 में चिकित्सा सुविधा के क्षेत्र में हैम रेडियो के उपयोग पर संयुक्त गोष्ठी का आयोजन कर गहन विचार विमर्श किया।

इस तकनीकी कार्यशाला में प्रमुख वक्ताओं में यूकोष्ठ से निवेशक डॉ. राजेंद्र डोगल, ईएमआरआई-108 के प्रमुख कार्यकारी अधिकारी अनूप नीटपाल तथा विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरुआ ने उत्तराखण्ड के दूरस्थ क्षेत्रों में फोन तथा मोबाइल नेटवर्क के काम नहीं करने का कारण या मरीजों के फोन प्राप्त न हो पाने के विकल्प के रूप में हैम रेडियो के उपयोग पर विचार व्यक्त किए तथा चर्चा में भाग लिया। श्री संदीप बरुआ ने समाधान प्रस्तुत करते हुए कहा कि पूरे उत्तराखण्ड में 2-3 हैम रिपिटर स्टेशन लगाकर यूकोष्ठ की सहायता से बने 32 हैम रेडियो लाइसेंस होल्डर के नेटवर्क द्वारा मोबाइल एंबुलेंस, ईएमआरआई कॉल सेंटरों के संपर्क में रह सकती है। इसकी सहायता से एम्बुलेंस साइट पर एम्बुलेंस भेजने के लिए विभिन्न स्थानों पर हैम रेडियो सपोर्ट सिस्टम का प्रयोग किया जाएगा। इसके अंतर्गत का परीक्षण करने के लिए सोय ही ईएमआरआई एक संचार रजिटर मरीज की अधिक संख्या वाला क्षेत्र देखकर यूकोष्ठ तथा विज्ञान प्रसार की सहायता से हैम रिपिटर स्टेशन (मानव उद्धार) की स्थापना करेगी तथा परीक्षण एम्बुलेंस में हैम रेडियो की सहायता से संचालित एपीआरएस अटोमैटिक पोजिशनिंग सिस्टम लगाकर सम्पूर्ण नेटवर्क का उपयोग परखा जाएगा। यदि यह परीक्षण सफल रहता है तो यह पूरे उत्तराखण्ड में लागू करके दूर-दराज के क्षेत्रों के मरीजों के लिए स्वास्थ्य सुविधाएं समग्र पर प्राप्त करने का एक उपयोगी वैज्ञानिक माध्यम सिद्ध होगा।

इस कार्यशाला के उद्घाटन सत्र में अपने संबोधन में डॉ. राजेंद्र डोगल, निदेशक यूकोष्ठ ने कहा कि अन्य उपयोगी के साथ ही स्वास्थ्य सेवाओं के लिए हैम रेडियो के वैज्ञानिक उपयोग से एम्बुलेंस में घायलों व वरिष्ठ चिकित्सकीय सुविधा की आवश्यकता वाले मरीजों में ज़रूरत मर्यादों की जान बचाने में उपयोगी सिद्ध होगा। डॉ. डोगल ने कहा कि हैम रेडियो का एम्बुलेंस गाइडों की स्पीड, दिशा, मुखालतब से दूरी तथा एम्बुलेंस भेजने में प्रयोग से आपदा संचार के क्षेत्र में शीघ्र ही सरलता हासिल होगी।

ईएमआरआई के मुख्य कार्यकारी अधिकारी अनूप नीटपाल ने इस अवसर पर एक व्याख्यान दिया जिससे उन्होंने 108 एम्बुलेंस सेवा के उत्तराखण्ड में स्थापना से अब तक के विकास व भविष्य की योजनाओं के साथ ही विभिन्न विभागों के साथ किए समन्वय के बारे में बताया। उन्होंने अपने अनुभवों के आधार पर उन क्षेत्रों के बारे में बताया जहां के मरीजों की जान मोबाइल नेटवर्क न होने के कारण चिकित्सा सुविधा न पहुंचने की वजह से खोचिय में रहती है। श्री नीटपाल ने कहा कि यूकोष्ठ तथा विज्ञान प्रसार की सहायता से हैम रेडियो सम्पूर्ण स्थानों का माध्यम बने ताकि सभी मरीज या घायल संदेश भेजकर काल सेंटर की सहायता से एम्बुलेंस को बुलाकर चिकित्सकीय मदद व प्राथमिक चिकित्सा प्राप्त कर सकें।



# Recent Training at National Institute of Disaster Management (NIDM)

156 likes



विद्या मंदिर इंटर कॉलेज में 23 अगस्त को जुटेंगे कई स्कूलों के बच्चे

# अंतरिक्ष यात्रियों से छात्र करेंगे बात

मेरठ | वरिष्ठ संवाददाता

शास्त्रीनगर स्थित विद्या मंदिर इंटर कॉलेज में 23 अगस्त को कई स्कूलों के छात्र अंतरिक्ष यात्रियों से बात करेंगे। यह कार्यक्रम एआरआईएसएस (अंतरराष्ट्रीय अंतरिक्ष स्टेशन स्थित अमेच्योर रेडियो संगठन), चंद्रशेखर विज्ञान क्लब के सहयोग से होगा। कार्यक्रम में छात्रों को करीब 10 से 12 मिनट अंतरिक्ष यात्रियों से बात करने का मौका मिलेगा। छात्र अंतरिक्ष यात्रियों से वहां कैसे रहते हैं, क्या खाते हैं, कैसे महसूस करते हैं आदि सवाल पूछेंगे। छात्र अंतरिक्ष यात्री रिकी आरनोल्ड से बात करेंगे। कार्यक्रम से पहले से चुने गए स्कूलों और कॉलेजों में जाकर बच्चों को अंतरराष्ट्रीय स्टेशन एआरआईएसएस के प्रति जागरूक किया जाएगा।



## ये हैं चुने गए स्कूल

कैपिटल पब्लिक स्कूल, सरस्वती शिशु मंदिर, हर मिलाप इंटर कॉलेज, अंबेडकर इंटर कॉलेज, केंद्रीय विद्यालय डोंगरा लाइन समेत 15 स्कूलों के बच्चे कार्यक्रम में हिस्सा लेंगे। इस बारे में विज्ञान प्रचारक संजय शर्मा ने कहा कि हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है।

कार्यक्रम का काफी समय से था इंतजार

हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है। इसके लिए हमारे क्लब को बीनजे अवार्ड से विज्ञान प्रसार ने सम्मानित भी किया है। उक्त कार्यक्रम के लिए हमें काफी समय से इंतजार था। इसके लिए हमने बच्चों को पूर्ण तैयारी करा दी है।

संजय शर्मा, विज्ञान प्रचारक, चंद्रशेखर विज्ञान क्लब



स्कूलों में विज्ञान के कार्यक्रम के लिए मैं उत्प्रेरक प्रयास करती हूँ। लगभग डेढ़ साल बाद हमें इस प्रोग्राम की अनुमति मिली है। पश्चिम में शायद यह पहला प्रोग्राम होने जा रहा है। रंजना गौड़, प्रधानाचार्या विद्या मंदिर इंटर कॉलेज

हमारी टीम के सदस्य हमें रेडियो के माध्यम से वैज्ञानिकों से बात कराएंगे। इसके लिए अमेच्योर रेडियो सिस्टम से तैयारी की जा रही है। संदीप बरवा, सीनियर वैज्ञानिक





Lal Bahadur Shastri  
National Academy of Administration  
Mussoorie - 248 179 (Uttarakhand) INDIA

Rajesh Arya  
Deputy Director (Sr.)

Dated: 22.04.2010

*Shri Sh. Sandeep Baruah*

It was indeed a great pleasure having you with us at the Academy to deliver a talk to the Officer Trainees of the Professional Course, Phase-I (2009 batch) of the Indian Administrative Service.

Your talk was extremely well received and the trainees appreciated the issues and points highlighted by you during the session. On behalf of the Lal Bahadur Shastri National Academy of Administration, Mussoorie and the Officer Trainees, I would like to take this opportunity to thank you for having taken time off from your busy schedule to visit the Academy.

I hope you enjoyed visiting the Academy. I wish that your association with the Academy continues in the future as well.<sup>17</sup>

*With warm regards,*

Yours sincerely,

*[Signature]*  
[Rajesh Arya]

Shri Sandeep Baruah  
Scientific Officer  
Vigyan Prasar,  
New Delhi

Appreciation Letter  
from Centre for Disaster  
Management,  
Lal Bahadur Shastri  
National Academy of  
Administration  
(IAS, IPS Training  
Academy where I  
Conducted training for  
IAS probationers



# Lecture and Technical Demonstration Programme at Nalgonda Telangana

## Workshop on Ham Radio Digital Communications at SPAES School, Nalgonda



A Workshop on Ham Radio Digital Communications was conducted at SPAES School, Huzur Nagar, Nalgonda jointly by Vignan Prasar and NIAR on 27 Apr 2013. About 100 students and staff were introduced to various types of Amateur Radio Digital Communications. The



# HAM operator helps families connect with Tsunami victims

**RAMESH  
RAMACHANDRAN**  
TRIBUNE NEWS SERVICE

**NEW DELHI, DECEMBER 28**

An amateur radio enthusiast based in the Capital has succeeded where most government agencies have failed. Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair, the capital of Andaman and Nicobar Islands, and has helped relay messages between the people stranded on the island and their families back home.

Sitting at his terminal Tuesday afternoon, Baruah told The Tribune that he has received 10 "calls" over the past 48 hours. "I have received e-mails and SMSes from several places at home and abroad ... Bangalore, Ranchi, Pune and Thailand ... I have relayed all their messages to this team of HAM operators stationed at Port Blair and forwarded the replies from them to the families wherever they are," he said. One such distraught family is from New Delhi.

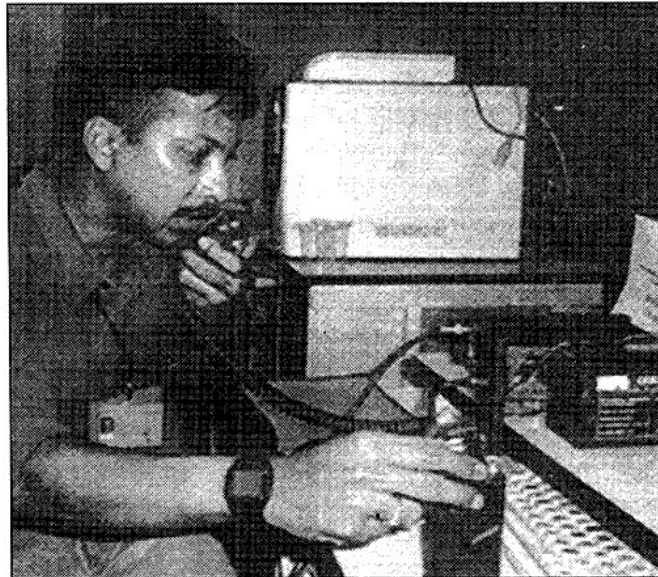
Dr Karan Singh Chauhan, who teaches in a college here, was holidaying with his two sons and a daughter on the island when the Tsunami hit the shore. It had only been a few days from the time they reached Port Blair. "Fortunately," Dr Chauhan recalled, "There were these people staying on the fifth floor of the hotel where we were put up ... they had this equipment (HAM), so we asked them if they could relay the infor-

mation of our well-being to people back home."

Within hours, Sandeep Baruah was on the telephone informing Dr Chauhan's domestic help of their whereabouts. Dr Chauhan and his family, who returned to the Capital last night, have not spoken with Baruah yet but he is all praise for him and the amateur radio operators on the island for coming to his help in their hour of need. Baruah, meanwhile, has no regrets. He has no time for that for there are other calls to be attended to, he says as a distant station crackles at his terminal.

Like Dr Chauhan, Mrs Cesar Maia from Bangkok, Thailand, has established contact with Baruah. She wants to if her husband is safe and sound on the island. "I have not received any news about her husband but I am trying ... the audio quality today is poor, so I might have to wait longer to hear from my counterparts stationed on the island," says Baruah, who is happy being Good Samaritan for people he has come to know only in the past few days.

Meanwhile, Dr Chauhan is still to recover from his harrowing experience on the island. "Buildings were literally swaying from side to side, the hotel where we were staying was damaged ... there were cracks in the walls, the sea was violent and washed away anything and everything that came in its way ... even the boundary wall of a college nearby was swept away ... all of us spent the first night outside," he recalls before he, his children and one other family flew to Kolkata on way to Delhi.



**Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair.**

## Delhiites chip in with relief

**TRIBUNE NEWS SERVICE**

**NEW DELHI, DECEMBER 28**

The leader of Opposition in Delhi Legislative Assembly, Prof. Jagdish Mukhi, has expressed grief over the widespread death and destruction caused by the Tsunami in southern India and many countries in the Indian Ocean.

A meeting of the BJP legislature party was called in this regard and it observed a two-minute silence as a mark of respect to the deceased. The BJP legislators have also

decided to donate their one-month salary for the victims.

Meanwhile, the NDMC Vice Chairperson, Tajdar Babar, has moved a resolution for contributing Rs. one crore as financial assistance from the municipal funds. This is in addition to the token contribution from NDMC employees for the quake victims of Tamil Nadu.

The Municipal Corporation of Delhi has also decided to pay Rs. 4 crore to the Prime Minister's Relief fund. This fund is being raised by way of

contributions from MCD councilors who are contributing their one month's stipend and employees who are contributing one day's salary. The contribution of the latter adds up to Rs 3 crore.

According to the mayor, the MCD has set up collection centres in all 12 zones under the supervision of Deputy Commissioner to collect relief materials. The material collected would be handed over to the Ministry of Home Affairs for transportation to the affected areas.

Vigyan Prasar's  
Contribution  
To Emergency  
Communication  
Media Coverage  
During Tsunami  
operation



# Vigyan Prasar's contribution to emergency communication During Bhuj Earthquake

NEW DELHI SUNDAY FEBRUARY 4 2001

## EARTHQUAKE

Local administration carrying on demolition of damaged buildings in Bhuj. PHOTO: Manish Gwarp

# From sinking Titanic to quaked Bhuj, ham picks up SOS

Saurabh Shukla  
New Delhi, February 3

THEY MADE news for the first time when they beat everybody by intercepting an SOS from a sinking Titanic in 1911. They were in action during the Morvi floods of 1979, Gulf War, Orissa cyclone, and the Latur and the Uttarkashi earthquakes. They are back again aiding the Gujarat relief effort in whatever manner they can. They are the ham radio operators.

After trying for two days to track his brother in Gandhidham, Jodhpur's VK Banchal despaired. But then somebody

suggested he should try 'ham' radio operation network in Delhi. He did. A few hours later, his telephone rang. "Your brother Sanjay is safe," said the caller.

The same ham network helped Delhi's Dr Sujata get in touch with her husband in Anjar, one of the worst hit areas.

High frequency radio transmitter/receivers are the standard equipment for all hams, who have to pass a stiff international test to get their licence. The word 'ham' is said to have been taken from the first letters of the three pioneers of radio communications: H (from Hertz), A (from Armstrong, inventor of Oscillator circuit), and M (from Marconi).

Functioning out of a tiny shack in Delhi with whatever little manpower they have, these 'hams' have been sending "emergency disaster communication messages" to the Gujarat amateur radio operators' network.

They get back-up support from other individual hams in Delhi, who are keeping track of the government agencies' requirements plus passing on the distress messages.

Says Sandeep Baruah, one of the hams associated with the Delhi station, "We have five base stations operating — in Anjar, Bachau, Bhuj, Gandhidham and one located right inside the Chief

Minister's residence. There are some mobile units too, who quickly relocate themselves to send us the replies to our queries about the situation in remoter parts of the state."

The Delhi hams have been flooded with calls from all parts of India. "Some from Bihar, Bengal, Rajasthan and even from areas in Gujarat," says Baruah. But it's not an easy job tracking people and relaying messages.

Especially for those operating out of remote areas of Gujarat. "There's no power in many areas. Our radio sets can't run for very long on batteries alone," says a Gujarat ham, Dalbir Singh. A big draw

on battery power is adverse weather. "Often messages have to be re-routed through hams in Mumbai or Hyderabad as direct communication is not possible," he explained.

"For most hams, this is purely voluntary work," explains Dr Kamble of the DST, agreeing that there was need for more hams in the country. Barely 2,000 of the 10,000 licencees are active now. A related factor restricting growth of ham-culture in India is government's lack of support, lamented an enthusiast. Reason: Costly equipment — mostly imported (nothing less than Rs 40,000) and no relaxation on customs duties.

## Fresh round of tremors spreads panic among quake survivors

Rathin Das  
Ahmedabad, February 3

A FRESH tremor, measuring 5.0 on the Richter scale, this morning coupled with the doomsday prediction of a local astrologer spread panic among the locals here.

The self-styled astrologer, Ambalal Damodardas Patel, who

mal with a few shopkeepers raising shutters.

Minister of State for Home Haren Pandya urged the panic-stricken people not to succumb to imaginary fears. He announced that 50 teams of engineers and

### Cases registered

builders and architects would have nothing to do with these teams, the Minister asserted.

Meanwhile, the State Government has decided to build a memorial for the school children who were killed while marching through Anjar on Republic Day. An additional ex-gratia payment of Rs 50,000 would be made to the

## Sharjah trip could still be a reality

EVEN THOUGH Union Sports Minister Uma Bharti did not approve of India participating in the three-nation tournament in Sharjah for the quake victims in Gujarat, sources close to the Ministry of External Affairs and the PMO said the February 8-11 tournament could still be a reality.

The sources said, Minister of External Affairs Jaswant Singh

## No scientific link between corpses, epidemics: WHO

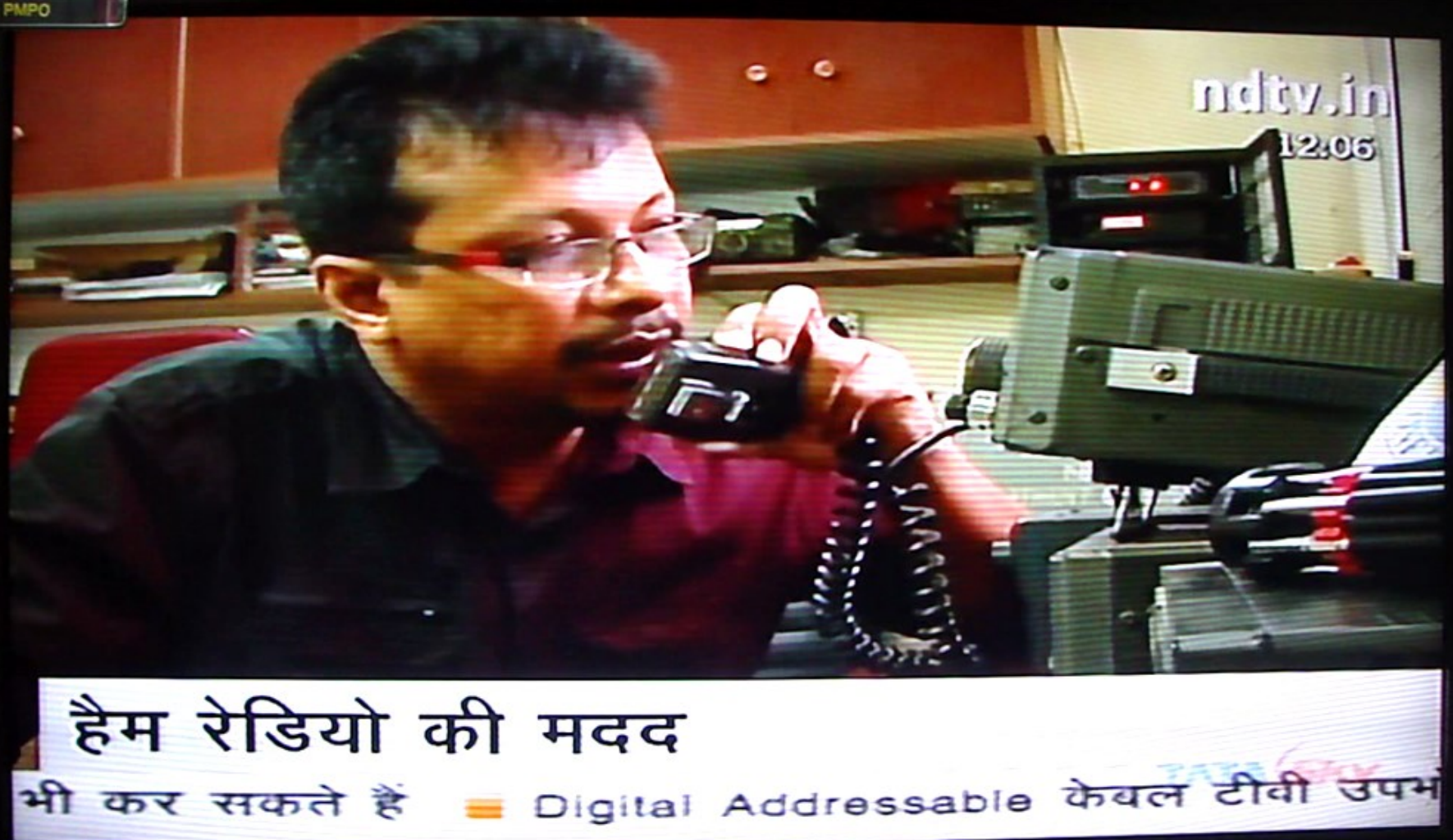
DISMISSING MYTHS in the aftermath of natural disasters, the World Health Organisation (WHO) has said that communicable diseases do not usually occur after earthquakes. However, epidemic risk factors were the rupture of water sanitation, interruption of public health services such as immunisation and lack of control

WHO report, after the Turkey quake, said.

It said the health hazard associated with bodies was negligible and the contamination may occur in very limited cases when the corpses are in contact with the water system and transmit gastro-enteritis.

"A relationship between cadavers and epidemics has never been scientifically demonstrated or reported."





NDTV Coverage of VP's role during Uttarakhand Flood



the edge, and high court down to earth person]. Thanks to **Sumit Sh De**, #VU2BCC who took this shot for me! 73 de #VU2MUE On behalf of North Eastern hams I assured that East India Ham Festival would also be organized in future in some exotic beautiful place in the North East! 😊 **Mandarmani** ham event is a grand success. #hamradio #amateurradio



Make profile picture



Comment

Share

You, Saborni Nag Biswas and 107 others



Write a comment...



## East India Ham Meet, Manadarmani, kolkata





## The First Social Network: Chewing the Rag With India's Ham Radio Operators

Rohan Swamy, 22 July 2014

f Share on Facebook

🐦 Tweet

in Share

✉ Email

👤 Reddit

💬 2 comments



In an office in Qutub Institutional Area, Sandeep Baruah, Scientist-E with the Vigyan Prasar, a part of the Department of Science and Technology, sits down to listen for ham radio operators in a 7,000 mile radius around Delhi. His cabin, a small, cramped place, located in a corner of a second floor office is littered with books and radio equipment, an unfinished directional antenna, and a laptop connected to another receiver.

As his system goes live, little coloured dots on the screen begin appearing all over Europe, Indonesia, Malaysia and Thailand. A few in India and South Africa complete the picture.

**NDTV** Gadget News  
On Vigyan Prasar  
(22 July 2014)

NDTV web link

<https://tinyurl.com/y45ssz7n>

# Outreach Programmes







Imparting hands-on Experience to technical students (BITS Pilani)



Another ham at a distant corner  
of the country talks to the students and  
help me to give a successful demonstration



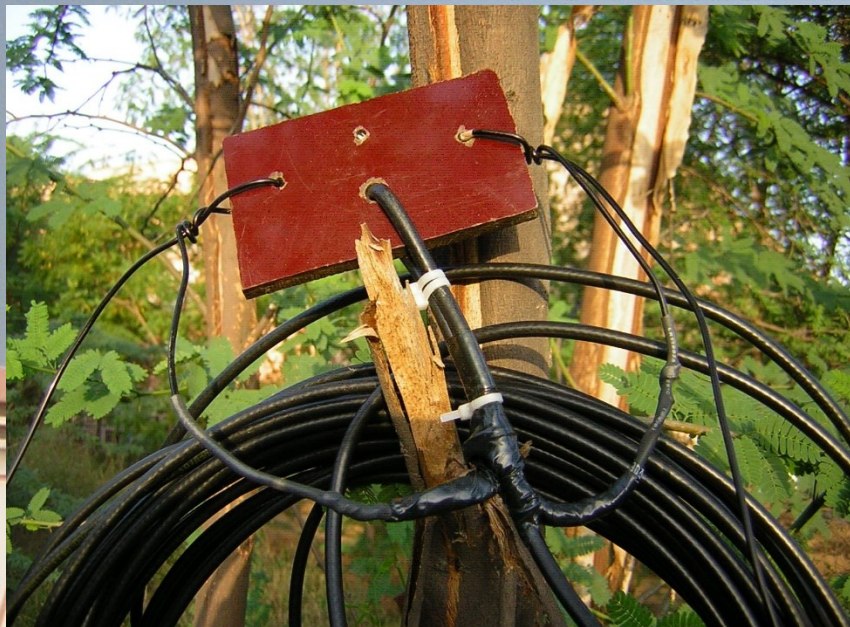
Only retired hams  
can help me



Success of long distance  
communication demo also depends on  
good ionospheric propagation condition



I install homemade dipole antennas  
at the location of the demonstration



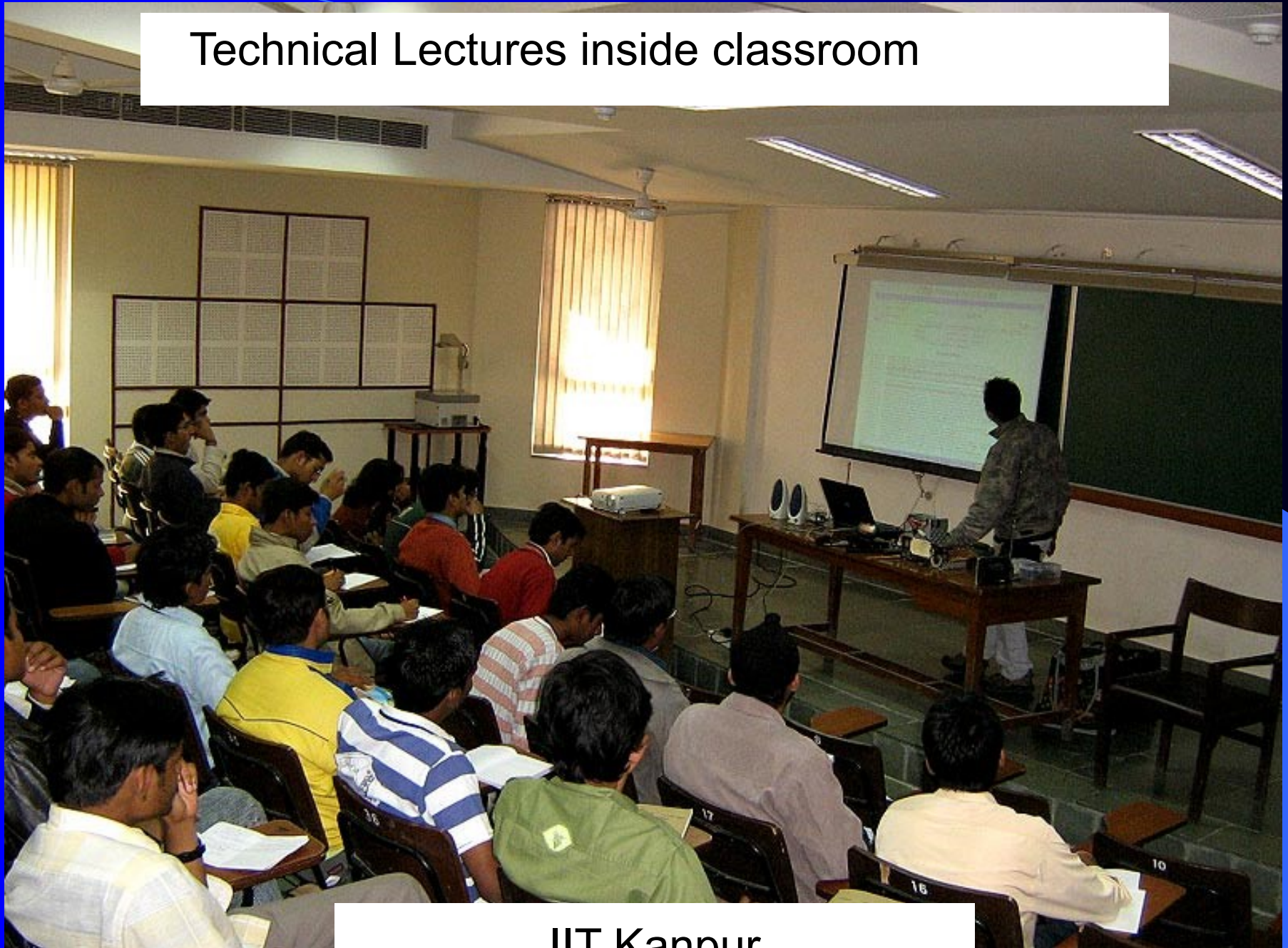


Provide resource materials (Morse Code learning cassettes, CD on Ham Radio, Books, Collection of technical know-how on low cost ham radio kit building





## Technical Lectures inside classroom



IIT Kanpur

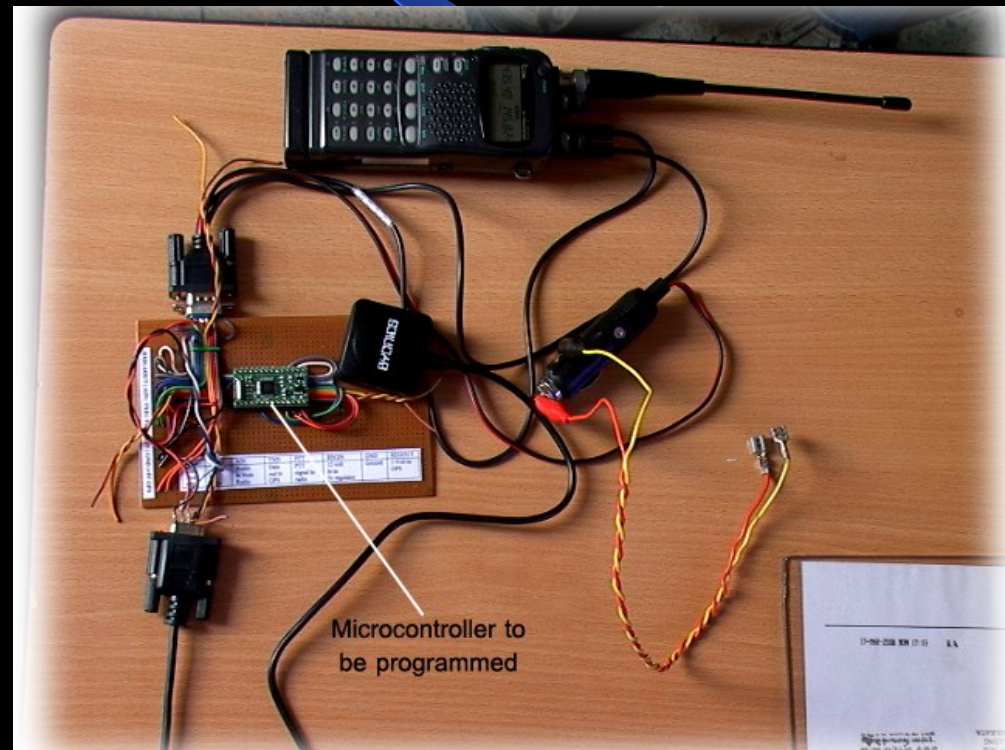
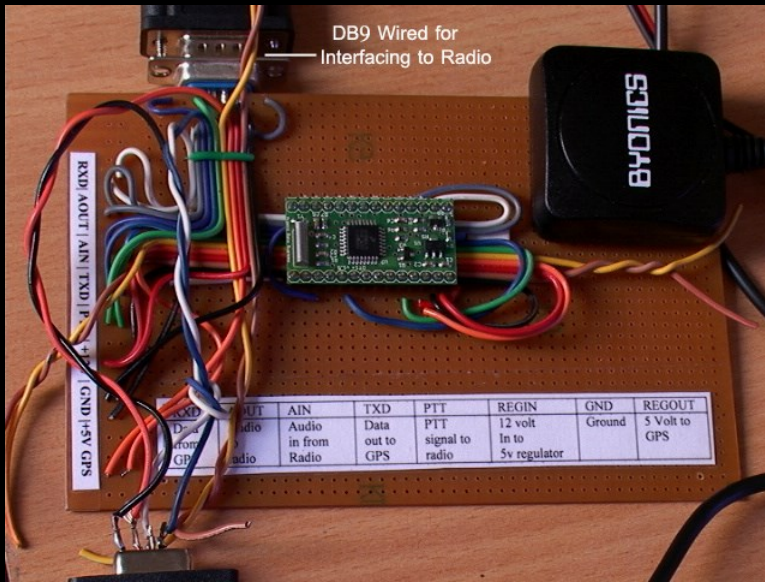
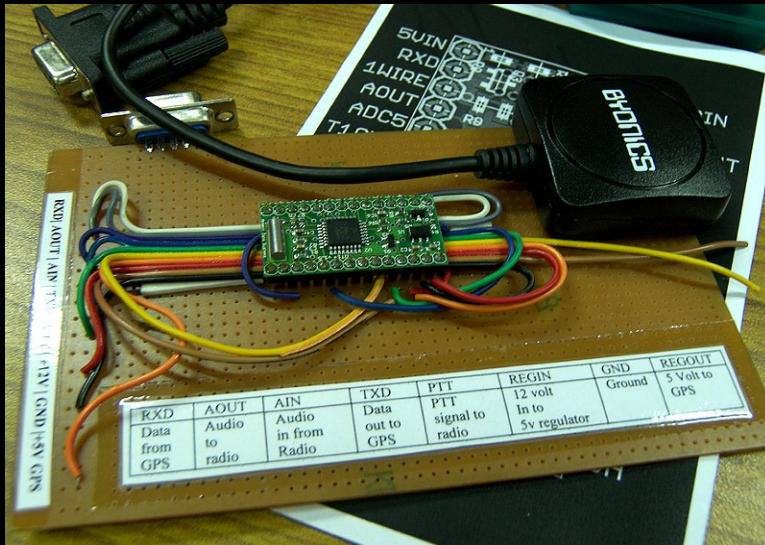




Guiding students to assemble kits



# Presently guiding three students from Manipal University to assemble an APRS tracker Weather Balloon Payload





Coordinating FOXHUNT (a radio direction finding sports)





Lecture/Demo/Training/Awareness Programmes





**Demonstrating ham radio portable operation capability**



# Funding is needed to Promote Ham Radio

- **INFRASTRUCTURE BUILD-UP** The State of the Art Centres at different states to work as Resource Centre providing Continuous Training
- Regular Technical Workshops in collaboration with promoting Bodies required ( 1 workshop in each of the states in a year total
- hams without equipment need to be provided with ham transceiver kits which they would build under expert guidance



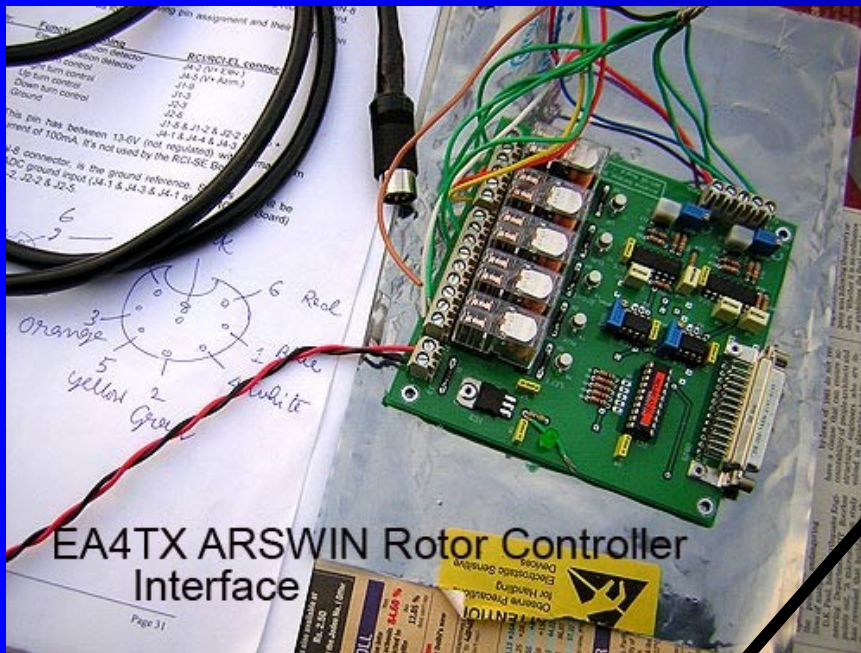
Demo at Shimla



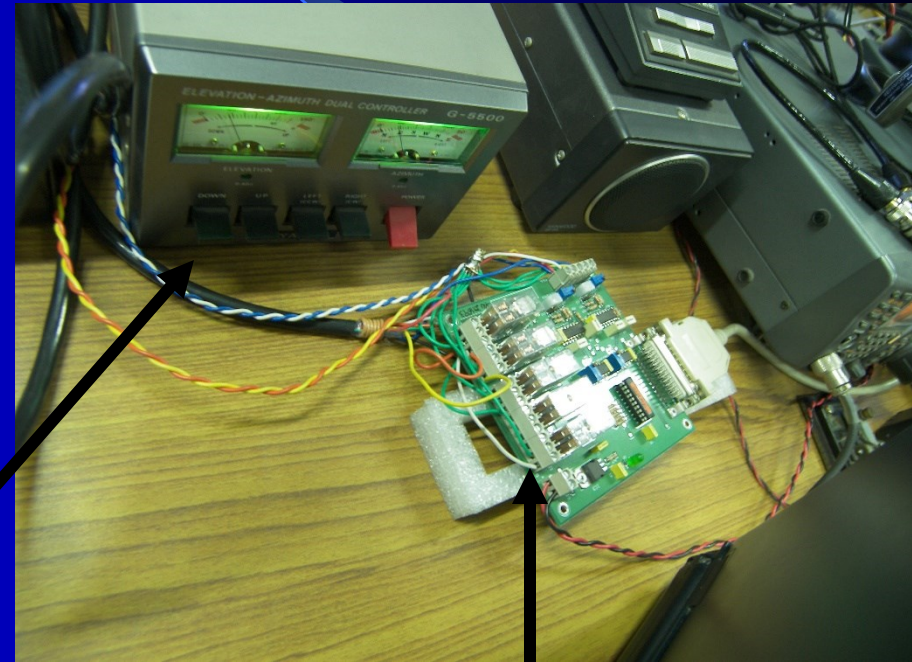
# Further Upgradation required



# New Azimuth-Elevation control Required



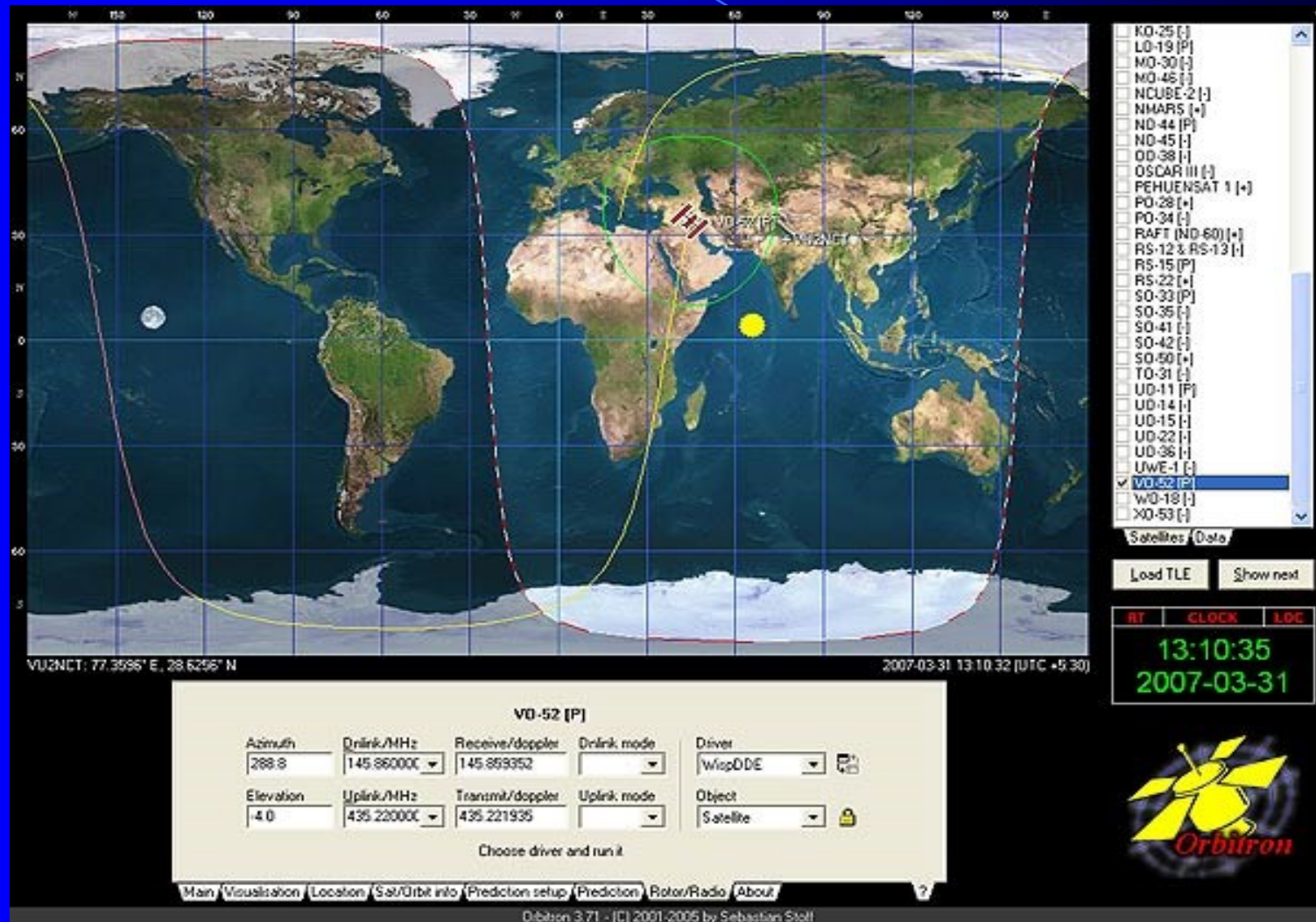
Manual Rotor Controller



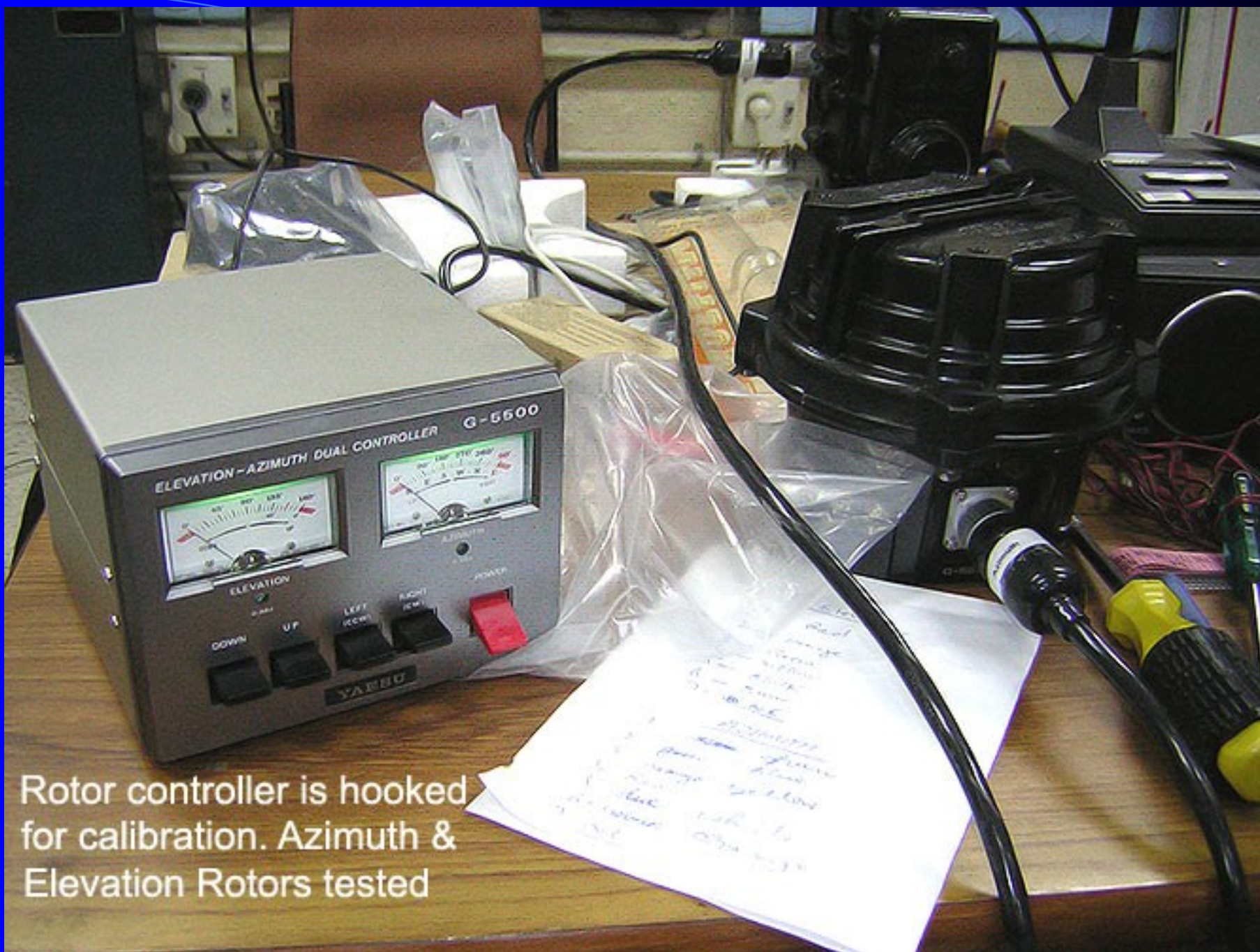
A/D rotor controller  
interfaced to computer



# Automatic Satellite Tracking







Rotor controller is hooked  
for calibration. Azimuth &  
Elevation Rotors tested



# VHF Ham Repeater Station VU2DLR

(for relaying of line-of-sight ham transmissions)



# Mock drill at Gurgaon (December 1 2006) at the behest of National Disaster Management Authority (NDMA)





## A Better Prepared Amateur Radio Response

Have you been listening to or reading the comments of the homeland security and emergency management leadership? Have you heard their remarks and thought about how they apply to amateur radio? This month we'll take a look at a few of the puzzle pieces and see if we're getting the message.

### Preparation and Preparedness

For decades the Federal Emergency Management Agency has been responsible for preparing and responding to disasters. FEMA has now been integrated into the Department of Homeland Security as the department's Emergency Preparedness and Response Directorate, under the day-to-day direction of Chief Operating Officer Ron Castleman and Undersecretary Mike Brown, who often speaks on the topics of preparation and preparedness.

Over the summer, Secretary of Homeland Security Tom Ridge spoke at a Public Preparedness Symposium. In his speech, he discussed a tabletop exercise in which he and 25 governors participated. According to Ridge, the exercise pointed out that in many cases you do not have all of the information that you would like to have, but "you have to do something. You can't wait until you have it all."

Ridge continued, "You can't secure the country from Washington, DC. You need partners all around the country in order to make it safer and more secure... Homeland security must be a priority in every home, every city, every neighborhood across America."

"Our goal is to achieve seamless protection, a nation knit tightly together by shared vigilance, readiness, and communication," said Ridge. "Vigilance, readiness, and communication. And nowhere is this more important than in the area of emergency preparedness."

"No government entity, no organization, no information expert can replace individual responsibility. Citizens must choose to take actions," Ridge continued. "And our job is to make the choice an easy one. The success of our preparedness efforts and ultimately the entire homeland security mission depends on the involvement and work of individual citizens. Because if our communities are to rise to new levels of preparedness and security, each individual American must choose to make emergency planning a priority—a priority in our homes and our places of work and in our schools."

### Disasters Spawn Preparedness

According to Secretary Ridge, "If you ask people in south Florida or the Outer Banks of North Carolina about preparedness, they already know about buying supplies, keeping extra batteries handy, and even having a hurricane evacuation route planned. They get it. They hope they're not



Homeland Security Secretary Tom Ridge: "We've laid out a public goal, and you've got to help me meet it!" (Department of Homeland Security photo)

going to be hit by a hurricane. Chances are pretty good... they may or may not, but they're not going to wait for chance. They get prepared."

"I'm just amazed," said Ridge, "that more people don't think of it in terms of providing some peace of mind to their own lives and to their own families." He wants to see people "respond when they have to without thinking about it," and says he feels that "there is a willingness on the part of Americans to take on this responsibility."

### Public Goal

Ridge continued, "We've laid out a public goal, and you've got to help me meet it, please... that by the end of this year, we want at least 50 percent of Americans to have accepted their responsibility to be ready. It's a communication plan; some form of training to assist at the time of a disaster, the kit set aside, the readiness kit. We need to get 50 percent by the end of the year, and I think we can get it done."

"The Department of Homeland Security will add strength to the existing Ready Campaign by launching two new endeavors, Ready for Business, Ready for Kids. It will continue to work with the Citizen Corps to encourage participation from families across America, whether by preparing family ready kits and emergency plans or volunteering to aid in disaster planning or engaging in CPR and training exercises to help people in a life threatening situation."

"I've been amazed at the number of people who have come forward to serve on Citizen Corps councils. All walks of life, all backgrounds, all communities. I think we're near 1,000 communities that have a Citizen Corps. You meet some fascinating people. One fellow is in charge of the emergency radio network. You've got a bunch of ham radio operators in a tri-state area. He's got them networked together."

### Unification

Before September 11th every state, every city, and even individual response teams had their own pro-

### Training and Response in India

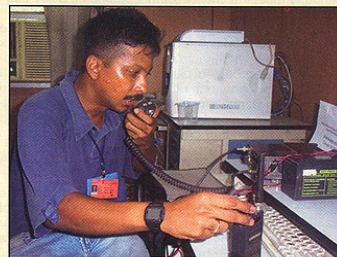
North America is not the only place amateur radio operators are active in emergency communications. Hams in India and other countries actively provide emergency communications support. This past summer, amateur radio operators participated in a simulated earthquake communications drill in the Northeast District of Delhi.

The Delhi Disaster Management Authority notified local hams about the "earthquake." Immediately, three teams of ham radio operators rushed to several critical locations to provide emergency communications. Stations were established at the Office of the Delhi Disaster Management Authority, Police Headquarters, Office of the Deputy Commissioner of Police, and the Divisional Commissioner's office.

According to Sandeep Baruah, VU2MUE, the communications teams brought mobile rigs, antennas, batteries, and solar-panel power backups. A digital communication setup was also established at the Divisional Commissioner's Office. Two-meter links were established on simplex when the local repeater "failed" because of the earthquake. HTs were also used for local communications. Messages were passed from the "disaster site" on behalf of the police and fire departments. Government officials visited the ham stations and felt that amateur radio can play a very important role in disaster communications. The hams were also able to demonstrate the use of Echolink in emergency communications and the potential for retrieving weather information.

In July, five members of the Mumbai Amateur Radio Society (MARS) sprang into action on behalf of the Ministry of Home Affairs and the United Nations Development Program. They were sent to the flood-ravaged areas of Bihar.

Nilesh Rathod, head of the local Amateur Radio Emergency Service, said, "There is a huge crisis in Bihar, but what is startling



Sandeep Baruah, VU2MUE, provides communications during a simulated earthquake exercise. (Photo courtesy of VU2MUE)

is that everyone seems used to the floods and the horrific living conditions."

He said that in the town of Sitamarhi the roads and rails were washed away. The local residents were building bamboo bridges to and charging people to cross them. That is how they recovered the cost of making the bridge and earned a living. Nilesh would have to jump into a Jeep or risk wading through leech-infested waters.

cedures for emergency incidents. "For the first time," Ridge now says, "the National Response Plan provides a comprehensive roadmap for everyone to follow. As part of this plan, the National Incident Management System was introduced so that those involved in emergency response understand what their role is—and have the tools they need to be effective. It's the nation's first-ever standardized approach to incident management and response and it unifies federal, state, and local lines of government into one coordinated effort. This integrated system makes America safer by establishing a uniform set of processes, protocols, and procedures that all emergency responders—at every level of government—will use to conduct response actions."

### All-Star Playbook

Ridge describes the system as "the playbook for the NFL Pro-Bowl Game." "When you bring together the best players from 26 different teams," he explains, "a plan of 'blue 42, slant right, release' might mean one thing to the quarterback, another thing to the wide receiver, and yet another to the linemen. At the call of 'hike,' chaos might break out on the field. At the very least, the play won't be successful. Now everyone shows up on game day with the same playbook. They will have the same preparation, the same goals and expectations, and—most important—they will be speaking the same language. When the quarterback calls a play, everyone will know what they are supposed to do. And in this battle, safety is far better than two points—in fact, it is the only result worth anything at all. Of course, a plan is nothing without the people to execute it, and many of you will play a vital role should we ever have to put our plan into action."

### Ham Radio is Ready

Now let's take a look at some of the ways amateur radio is

## TITAN DX

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October 2004 • CQ • 65

\*c/o CQ magazine  
e-mail: <wa3pzo@cq-amateur-radio.com>

American amateur radio journal CQ (October 2004) covering a mock drill conducted during a simulated earthquake at the behest of NDMA at North West District of Delhi



# Field days



## Disaster preparedness exercise



## Ham Meets for activity coordination



# Emergency backup communication support



SOS-10 Kanda  
As a Rally Marshal  
HP M1 Challenge 3  
Car Race

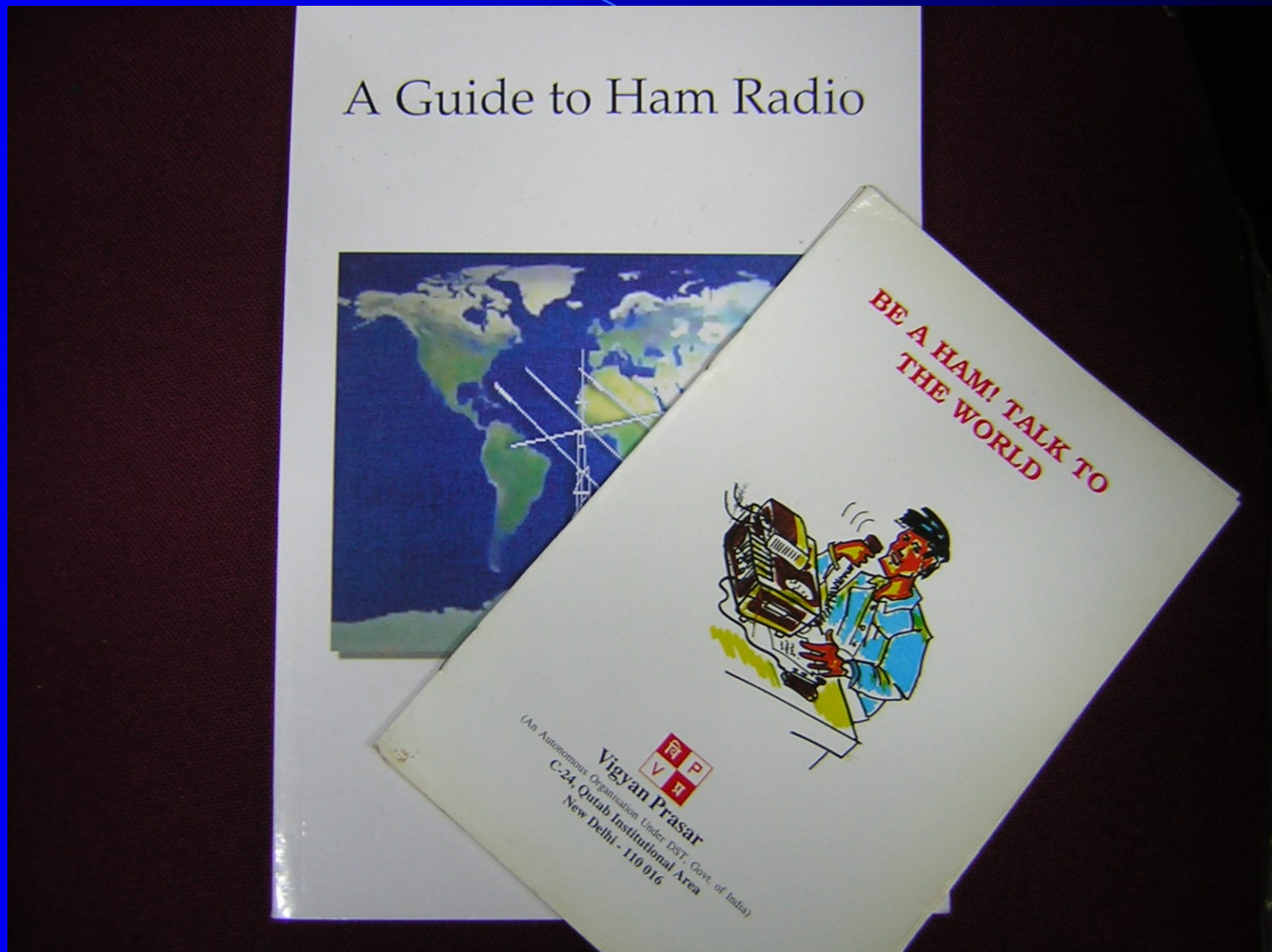


# Ham Meets (for activity coordination) & Technical Lectures





# Training Materials





# State Level Training Programme Uttarakhand 2006







# STATE LEVEL HAM RADIO TRAINING PROGRAMME FOR NSS PROGRAMME OFFICERS AND VOLUNTEERS

*Organised Jointly by :*

Vigyan Prasar, Department of Science & Technology (GOI), Noida (U.P.),  
Uttarakhand State Science & Technology (U-COST), Dehradun (U.A.) and  
National Service Scheme, Government of Uttarakhand, Dehradun (U.A.)

**7<sup>th</sup> June, 2006**

**RAJIV GANDHI**

**DAYA VYALA**

**DEH**





# STATE LEVEL HAM RADIO TRAINING PROGRAMME FOR NSS PROGRAMME OFFICERS AND VOLUNTEERS

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National Service Scheme (NSS), Government of Uttaranchal, Dehradun (U.A.)

**RAJIV GANDHI**

**2006**

**ALAYA, DEHRADUN**



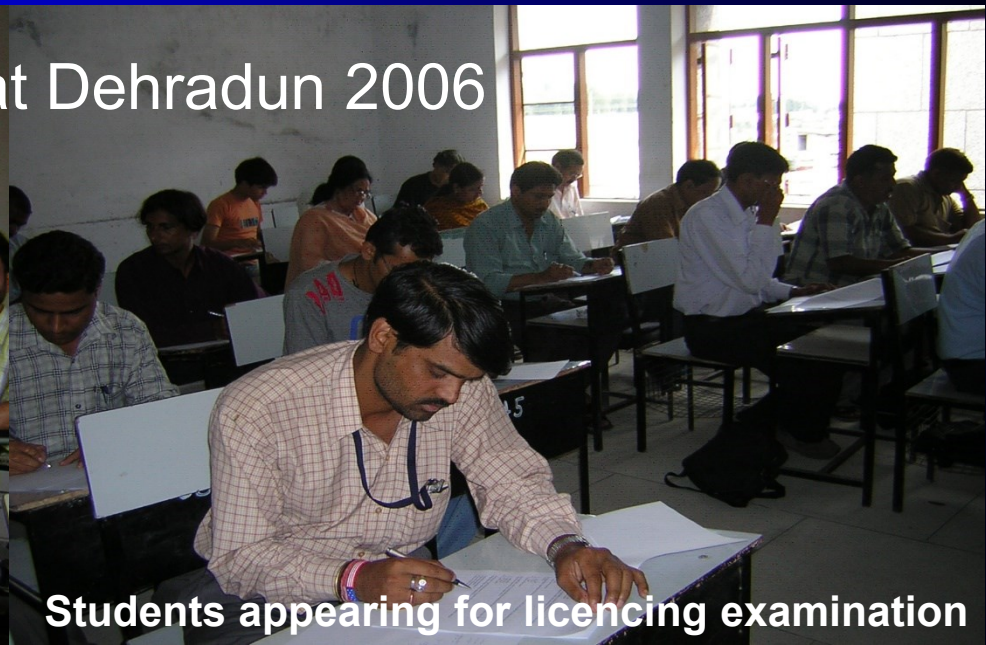




Examination conducted by Ministry of Communications



# 21 day Ham Radio Training at Dehradun 2006



Students appearing for licencing examination





**Ham Radio  
Operators  
provide  
voluntary  
emergency  
communication  
services during  
natural  
calamities when  
the other modes  
of  
communications  
break down**

My Illustration



Fax to: 23073457

URGENT

23017457

## विज्ञान प्रसार

(विज्ञान और प्रौद्योगिकी विभाग, भारत सरकार के अंतर्गत स्वायत्त संस्थान)  
सी-24, कुतुब इंस्टीट्यूशनल एरिया, ए.एस.सी.आई. भवन,  
नई दिल्ली 110 016



## VIGYAN PRASAR

(An autonomous organisation under the Dept. of  
Science & Technology, Govt. of India)  
C-24, Qutab Institutional Area, ASCI Building,  
New Delhi 110 016

VP/ 905/HAM/CO/2004

DATE: 30.12.2004

MESSAGE RECEIVED BY HAM RADIO VU2HFR (KOLKATA) FROM  
VU4NRO/VU2MYH (CAR NICOBAR) ON 30.12.04 AT 1:15PM ON 14.190 MHz

MESSAGE RECEIVED AT HAM RADIO STATION VU2NCT/VU2MUE (Vigyan Prasar)

### MESSAGE TO :

DIRECTOR (EMR), DTCGHS, NEW DELHI FAX : (011)23073467

LL : (011)23017302 / 9313743755

### REPORT OF CENTRAL MEDICAL TEAM DATED 29.12.2004

The team has started its work in Car Nicobar the worst affected island.

- 1) All 15 villages affected also IAF staff quarters. Of 20,000 population, as estimated 3,000 are dead and an equal number missing.
- 2) Other neighbouring island in Nicobar island of 1383 population 682 are missing.
- 3) Survivors are moved to higher areas in the jungles in the centre of the island. Roads are blocked by fallen trees.
- 4) D.C. coordinating rescue and relief efforts. Local Hospital 120 beds operational. There are no sterile supplies/dressings. O.T., XRAY and autoclave will work once generator requisitioned from Port Blair is received.
- 5) Our team is working fully with 3 specialists from Port Blair. Around 150 cases mostly injuries have been treated. 20 cases referred for management to Port Blair were airlifted by Air Force. 4 patients are dead.

**Disposal of dead :** This was done by burial. They have accepted advise for mass cremation. 530 bodies dispos. Local water sources being identified and chlorination arranged.

- 6) **Medical supplies is relief material from Gujarat collected from A.F. base and brought to hospital.** Additional supplies from Port Blair expected on 30th December. Staff only 5 nurses are working round the clock, additional nursing staff and doctors expected from Port Blair on 30th December. 3 teams including medical were sent out today to establish contact with local villages provide first aid arrange for moving seriously injured to hospital and for disposal of dead bodies.
- 7) Telemedicine conference held with Port Blair authorities and requirement informed. Plan for epidemic preparedness discussed with MS of Hospital. Add survey and fever survey being initiated.
- 8) **Measles vaccine supply awaited for immunizing children in 6 month, 5 year age group.**

29.12.2004

Coordinator Central Medical Team

Relayed by: Sandeep Baruah, Senior Scientific Officer, Vigyan Prasar

# Handling governmental relief messages during Tsunami



# Technology combined: Quoted by CQ (America)



*Pilot HS1HBJ used his airplane to survey damage in Thailand. (Photo courtesy of Phat, HS1WFK)*

Nicobar Island the next morning on a military aircraft and established communication between Port Blair and Nicobar. Hundreds of messages were passed each day between the mainland and the affected areas. One report said the number of messages reached 30,000. The only link for thousands of Indians and other country people who were worried about their friends and families on the islands was ham radio.

"Our station in the control room became the center of messages between Port Blair and Nicobar Island," said Prasad. "Survivors in Car Nicobar were

hams of the country located on the mainland have helped us in relaying the messages whenever there was skip between our stations in the islands. When telephone lines were restored on Tuesday, the 28th of December, the information received on the radio about the survivors from Car Nicobar, that they were alive, was conveyed to their anxious relatives on the mainland. We also helped about 15 foreign tourists, including several from the U.S., to send news to their families."

VU2JOS, along with other government officials, was sent to Hudbay Island for relief activity. "The common man was totally happy in utilizing our service, and the magnitude of their satisfaction on receiving the information about the welfare of their kith and kin was beyond one's imagination," said Prasad. Tremors continued for the next six days.

As the strong aftershocks continued throughout the night, the station remained on the air passing traffic to the Indian mainland. While some telephone service was restored the next day, the DXpedition operators reported the local authorities were "quite hungry for information on casualties in the region, since they have only a trickle of news from the outside. It seems that amateur radio is showing its value during a severe crisis."

ciated by the "Chief Secretary" of the Andamans.

## Technology Combined

During recent disasters we have seen the growing use of the internet combined with amateur radio. This disaster was no different. Sandeep, VU2MUE, said the "different technologies complemented each other."

A very long relief message for New Delhi was transmitted by Mohan, VU4/VU2MYH, in Car Nicobar on 30 December. VU2MUE could not copy the message because of poor propagation. The message was copied by Horey, VU2HFR, in Calcutta for relay to New Delhi. Instead of relaying the message on the air, VU2HFR in Calcutta typed it on his laptop computer and e-mailed it to Sandeep, VU2MUE, for further relay to the Director of Emergency Medical Relief Control Room in New Delhi. Confirmation that the message had been delivered was relayed back to the disaster area via amateur radio. Dr. Ravindran, Director of Emergency Medical Relief, thanked the ham radio volunteers for their support in handling government relief messages.

Many of the relief messages handled dealt with the daily number of deaths, missing, and injuries that each of us heard on the news. The Andamans

# Certificate of Appreciation for Tsunami Emergency Communication Support

## NATIONAL INSTITUTE OF AMATEUR RADIO



### CERTIFICATE OF APPRECIATION

*This Certificate is awarded to Mr / Ms. Sandeep Baruah, VU2MVE.....in  
recognition of valuable contributions to "Tsunami Emergency Communications /  
Promotion of Amateur Radio" at the International Seminar on Amateur Radio  
Communication in Disaster Management organized by NIAR at Chennai on 18<sup>th</sup>  
April, 2005.*

**N. VITTAL, IAS, VU2NVO**  
CHAIRMAN  
ORGANISING COMMITTEE

**S. SURI, VU2MY**  
CHAIRMAN & DIRECTOR  
N.I.A.R



My Home Station in 1998. Now it is just a little upgraded but not at all up to expectation



## Other science promotional activities

**During the year 2004**, successfully supervised and coordinated **Vigyan Rail Mobile Science Exhibition** across the country:

- Bareilly (06 Jan-Jan 08, 2004)
- Lucknow (09 Jan-13 Jan, 2004)
- Kanpur (14 Jan-17 Jan, 2004)
- Guwahati (15 Feb-20 Feb 2004)
- Dimapur (21 Feb- 23 Feb 2004)
- Tinsukia (24 Feb- 27 Feb 2004)
- Tirupati (12 Apr- 15 Apr, 2004)
- Chennai (16 Apr- 22 Apr, 2004)
- Mumbai (28 May- 4 June, 2004)
- Pune (05 June- 9 June, 2004)
- Jaipur (08 July-12 July, 2004)
- Gwalior (15 July- 17 July, 2004)





# Vigyan Rail Mobile Science Exhibition





Media Coverage (Lucknow, U.P.)  
January 9-13, 2004



The District Administrative Head (DM) Dr. Nanith Sehgal in Lucknow  
visiting the Science Exhibition on January 9, 2004



The Mobile Science Exhibition at Lucknow attracted a huge crowd



# Participation in Disaster Management 2008 International Exhibition (organized at the behest of National Disaster Management Authority)





VP Ham Stand at Disaster Management 2008 Exhibition





# Future plans

To establish HF Emailing Gateways at every district Headquarters (this network will function independent of Internet with provision to hook to Internet)



To install 400 units in 400 district HQ estimated budget is Rs. 8 crore



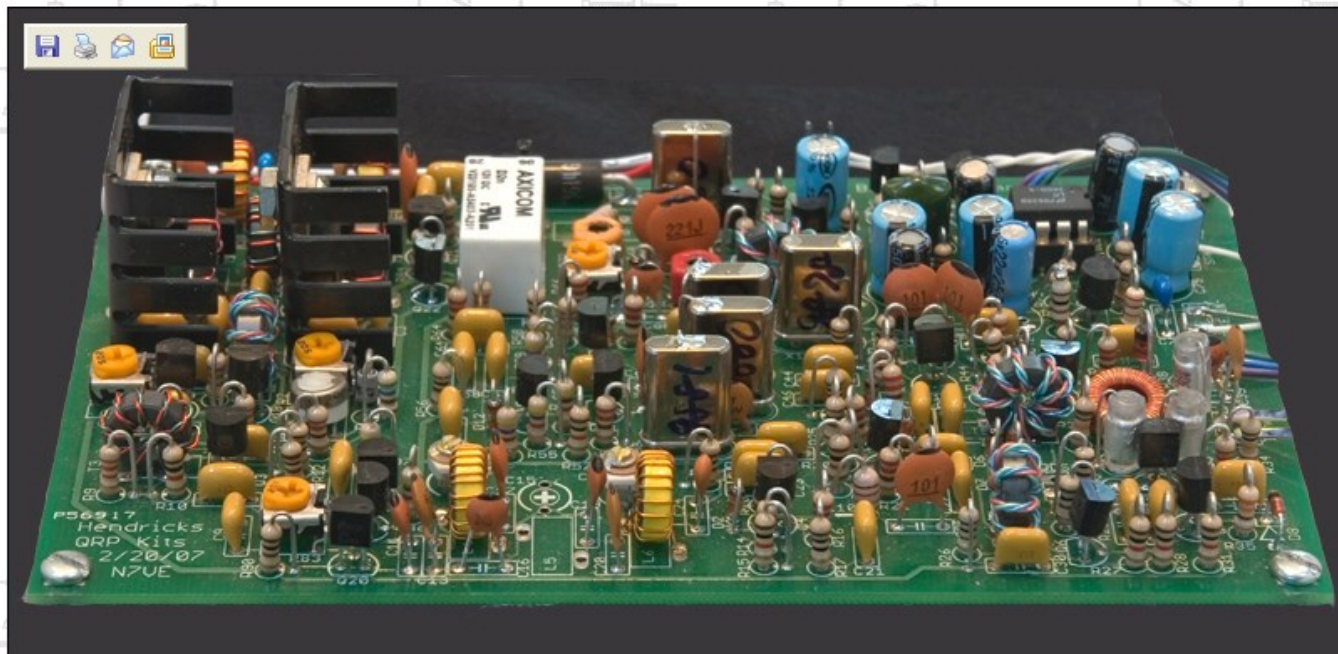
# To replicate low cost ham radio kits with indigenously developed technology

**To come out with an affordable HF ham transceiver.  
Indigenous Technical Know-How already available  
Cost would be kept below Rs.15,000/- or may as**

**Initially 20 pieces would be produced/replicated**

**Estimated budget Rs. 3 Lakh**

BITX is a kit designed by Ashar Farhan  
(a computer engineer, Hyderabad)



### The BitX20A Transceiver

The BitX20A is a SSB board and parts only kit that is based on the BitX20 that was designed by Ashlan Farhan. The original version was built ugly construction, and you had to source all the parts. I discovered the BitX20 site on Yahoo earlier this year, and decided that the BitX20 would be a neat kit for Hendricks QRP Kits. The problem was that it did not have a pcb. A team of Dan Tayloe, Jim Kortge and Arv Evans have worked countless hours making sure that the pcb version was stable and would meet United States F.C.C. Specs. We had to go through several revisions to get it right, and we are happy with the result, even though it took a long time. Some things just take time. The kit includes a commercial quality plated through, silkscreened, solder masked board, and all board mounted parts, plus the polyvaricon tuning capacitor.

An American company is  
replicating it at \$ 90



We have the expertise to replicate low cost ham radio kits



I assembled a much complicated design in 1993



# Bringing out a Publication (book) related to Low-Cost Ham radio kit building

At present different write-ups, technical articles, circuit diagrams etc. related to indigenous low-cost kit building are available to us but if we bring out a compilation of all these, it would be a great boon to the novice as well as the licensed hams. This would be sort of a one stop resource book available in India.

Address [http://www.qsl.net/vu2msy/homebrew/homebrewing\\_zone.htm](http://www.qsl.net/vu2msy/homebrew/homebrewing_zone.htm)

Canon Easy-WebPrint Print High Speed Print Preview Options Duplex View Print List



www.qsl.net/vu2msy

### Homebrewing Zone!

RESOURCES FOR THE HAM RADIO NOVICE

Hi! This is the area where I have a collection of articles, circuits related to homebrewing. You need to have "Acrobat Reader" to read these articles. To download the file, you may need to 'right click' and then select save target as' option.

**Acknowledgment:**  
OM Sahrudhin, VU2SDN & OM Adolf Shepherd, VU2AF (Amateur Radio Society of India) for providing the old issues of "Radio" (Journal of FARSI) and "Ham Radio News (Journal of ARSI). I am also grateful to OM Mani T.K., VU2ITI, who had generously sent me the photocopies of his book "Ham Radio Projects". The compilation of articles/circuits/hints & tips for homebrewers would continue in this section.

WARNING! It is illegal to possess and operate a wireless transmitter without a valid government licence

## VU2VWN 40m QRP Transmitter (2,438 kb)

(Courtesy: Easy to Build HAM RADIO PROJECTS VOL 1 by K.R. Vasantha Kumar, VU2VWN. Published by Thushar Baby, Crystal Publications, Cochin 683565)

## Modification of VU2VWN 40m QRP TX for 20m (23 kb)

(Courtesy: Easy to Build HAM RADIO PROJECTS VOL 1 by K.R. Vasantha Kumar, VU2VWN. Published by Thushar Baby, Crystal Publications, Cochin 683565)

## RM-96 Cost effective Transceiver by VU2RM (2,311 kb)

(Courtesy: <http://www.qsl.net/vu2upx>)



# To Establish a DSTAR Digital Repeater at New Delhi



## With Digital Voice & High Speed Data

### What is D-STAR?

D-STAR is a new ham radio system which offers digital voice and data communication. It connects repeater sites over microwave links and the Internet and forms a wide area ham radio network. The DSTAR system provides a new capability and functionality to the ham radio world and increases the efficiency of emergency communications.

**Cost of two Repeater  
Approx. Rs. 1.5 Lakhs**

### What can the D-STAR system do?

## **128kbps digital data and 4.8kbps digital voice communication**

The D-STAR system provides not only digital voice (DV mode) communication but also digital data transmission (DD mode). It can exchange various data files such as graphics, images, etc, at 128kbps.

## **voice and data can reach further than ever**

Multiple repeater links by radio and the Internet provide long distance communication to virtually anywhere.

## **Internet application available**

The D-STAR system uses the TCP/IP protocol, so when connected with a PC, web, e-mail and other Internet applications are available.

## **Wireless Internet Access**

No matter where you travel within the DSTAR network, you can access the web, e-mail, text messages and multimedia messages.

## **Independent network**

In DD mode, ID-1 can transfer data directly with another ID-1 without the use of a repeater. This is useful for establishing a simple network where a D-STAR repeater does not exist or D-STAR services are not required.

## **Increase efficiency of emergency communications**

Out in the field, fast emergency information is the key. Send pictures and weather charts to or from a remote location with the ID-1. "A picture is worth a thousand words", and efficient send/receive opens up your repeater for other emergency communications.

## Contribution to promotion of Amateur Radio/Telecom as an Alternative Mode of Community Communication for DIY Electronics and emergency preparedness radio networking

Name: **Sandeep Baruah, VIGYAN PRASAR**  
Designation: Scientist-F  
Qualification: M.Sc. (Agri)  
Date of Joining: **09.06.1998**  
DoB: 06.09.1969 (**Age 52**)

Shri Sandeep Baruah joined Vigyan Prasara in June 1998. At the time of joining he was entrusted to promote amateur radio as an alternative mode of community communication. He had carried out other projects under DST as a PI when assigned apart from amateur radio outreaching activities. Even before joining Vigyan Prasara he was involved in the promotion of amateur radio (ham radio) during his college days. He received his radio communication licence in 1989 when he was a student of Assam Agricultural University. He came out with a guidebook on amateur radio in 1993 which was widely used during those early days of amateur radio in India by the novice. Amateur radio outreaching activities carried out by him throughout the country are covered by various national media from time to time. Vigyan Prasara published a guidebook on amateur radio written by him in 2000, which is widely used by radio and electronics clubs across the country.



1993

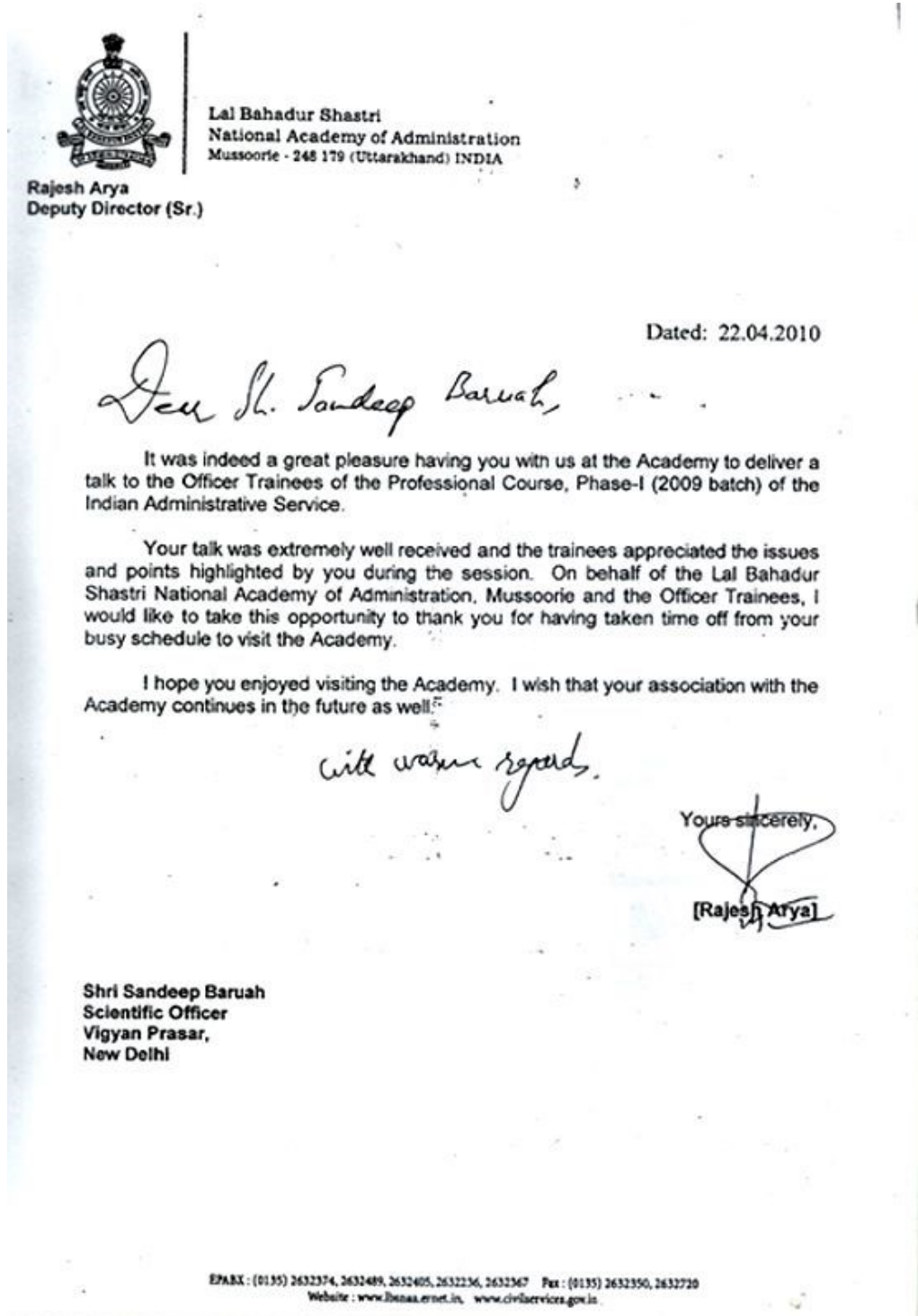


2000

During the last 20 years he was invited as a Guest Speaker by many of the country's premiere institutes and stakeholder agencies where he carried out training and technology demonstration programmes. Some of the premiere institutes where he conducted lecture and demonstration programme are:







1. Lal Bahadur Shastri National Academy of Administration (LBSNAA), Centre for Disaster Management (CDM), Mussoorie



2. National Institute of Disaster Management (NIDM), MHA, New Delhi  
[https://nidm.gov.in/PDF/trgreports/2018/September/24-28\\_nidm.pdf](https://nidm.gov.in/PDF/trgreports/2018/September/24-28_nidm.pdf)
3. National Disaster Management Authority (NDMA), MHA, New Delhi
4. Haryana Institute of Public Administration (HIPA), Gurgaon, Haryana
5. Sikkim State Council of Science & Technology, Gangtok
6. Uttarakhand Council for Science & Technology (UCOST), Dehradun
7. Indian Institute of Technology Kanpur

8. Indian Institute of Technology Roorkee
9. Indian Institute of Technology Guwahati
10. Indian Institute of Technology Delhi
11. Birla Institute of Technology and Science, Pilani
12. Vellore Institute of Technology, Vellore
13. Netaji Subhas Institute of Technology, Delhi
14. Manipal University Jaipur
15. University of Engineering & Management (UEM), Jaipur
16. Malaviya National Institute of Technology Jaipur
17. National Institute of Technology, Hamirpur
18. Atharva College of Engineering, Mumbai
19. Poornima College of Engineering, Jaipur
20. ABES Engineering College Ghaziabad
21. Royal Global Engineering College, Guwahati
22. Guru Nanak Dev Engineering College, Ludhiana
23. Guru Nanak Dev Polytechnic College, Ludhiana
24. Girijananda Chowdhury Institute of Management and Technology, Guwahati (GMIT Guwahati)
25. Guwahati Medical College, Guwahati
26. Assam Police Radio Organization, Guwahati
27. Army Technology HQ, Delhi
28. Snow and Avalanche Study Establishment (SASE), DRDO, Chandigarh
29. National Institute of Amateur Radio (NIAR), Hyderabad
30. Birla Industrial & Technological Museum Kolkata
31. Himachal Pradesh Council for Science, Technology & Environment (HIMCOSTE)
32. Punjab State Council for Science & TGPG, Chandigarh
33. Emergency Management and Research Institute (EMRI), Dehradun
34. IETE Guwahati Centre
35. National Bal Bhawan, New Delhi
36. Tata Institute of Social Sciences – Mumbai (Guwahati off campus)

		
<b>DISTRICT DISASTER MANAGEMENT AUTHORITY, (SOUTH WEST)</b> <b>OFFICE OF THE DISTRICT MAGISTRATE &amp; DEPUTY COMMISSIONER</b> <b>OLD TERMINAL TAX BUILDING KAPASHERA NEW DELHI-37</b>		
<b>प्रशस्ति पत्र</b> <b>COMMENDATION CERTIFICATE</b>		
नाम Name	<b>Mr. Sandeep Baruah</b>	
पद / संख्या Rank / Number	<b>VU2MUE</b>	
युनिट Unit	<b>DELHI HAMS</b>	
प्रशस्ति पत्र देवे का कारण Reason for the grant of Commendation Letter / Certificate for his / her praise worthy performance <u>In helping the administration of Delhi and providing Wireless Communication (HAM Radio) during</u> <u>Mega Mockdrill in Delhi NCR Region on Earthquake &amp; Fire/Rescue &amp; Evacuation dated 28.06.2019</u> <u>organised by National Disaster Management Authority along with Govt. of Delhi.</u> I wish him/her all the success in future.		
09 JUL 2019		<b>RAHUL SINGH, IAS</b> District Magistrate South-West District Govt. of NCT of Delhi Old Terminal Tax Building Kapashera, New Delhi-110037  <b>Mr. Rahul Singh, IAS</b> District Magistrate





NIT Hamirpur



IIT Kanpur



IIT Guwahati



VIT Vellore

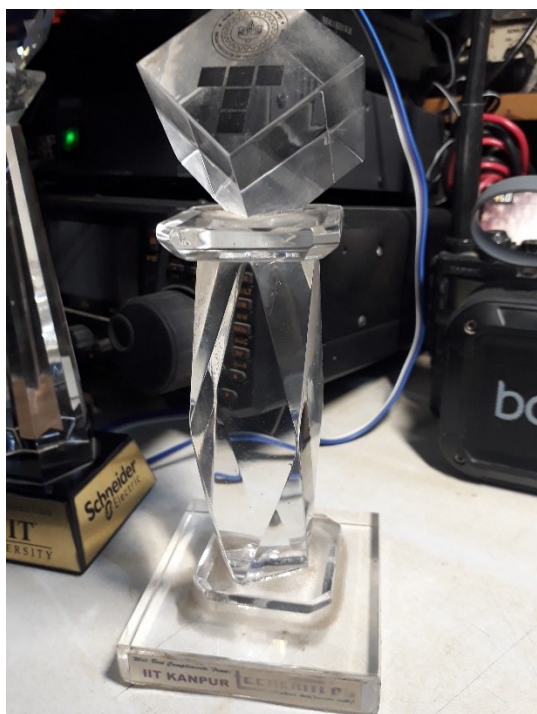


IIT Kanpur



IIT Roorkee





IIT Kanpur



Manipal University Jaipur



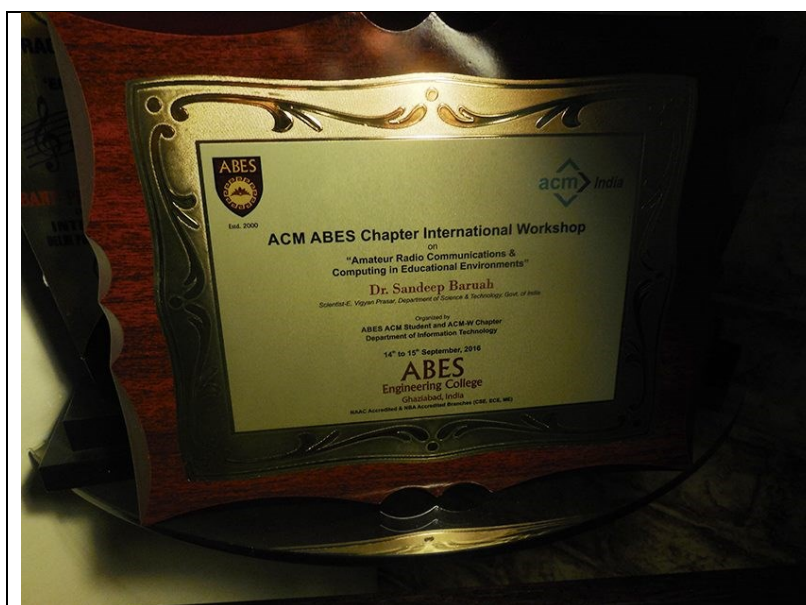
Mt. Abu Brahmakumari ham club



Rajkot Hamfest 2015



Atharva College of Engineering, Mumbai Amateur Radio Satellite Ground Station



Shri Baruah attended as the 'National Expert' at the IEEE International Seminar on Ham Radio titled "INTERNATIONAL WORKSHOP ON AMATEUR RADIO COMMUNICATION & COMPUTING IN EDUCATIONAL ENVIRONMENT" 14th & 15th SEPTEMBER 2016 at ABES Engineering College in Ghaziabad

International seminar at ABES Engineering College



Monthly Newsletter of Vigyan Prasara

# DREAM 2047

December 15, 1998 Vol. 1 No. 3

## VP News

### Vigyan Prasara has a new President

Shri M V Kamath is the new President of Vigyan Prasara. Born at Udupi in Karnataka, he is a journalist of great repute and much recognised for his services as an editor to the Free Press Group of Papers and the Illustrated Weekly of India. His career as a journalist spans many years and he continues to write regular columns for periodicals. He



has also had a teaching stint at Schools and Institutes of Journalism and Communication and has been the Honorary Director of Manipal Institute of Communications, Manipal. He has to his credit over 30 books including *The United States and India 1776-1976*; *Kissinger, The Incomplete Diplomat*; *The Innovative Banker*; *The Journalist's Handbook*; *The Pursuit of Excellence and Rediscovering Karnataka*.

## INSIDE

- Vigyan Prasara - An Insight Programmes on the anvil
- Bookworm
- Round-up
- India's S&T achievements
- Strange are the ways ...

### Vigyan Prasara VHF ham repeater station becomes operational

The Vigyan Prasara and NCSTC VHF ham repeater station, VU2DLR, became operational on December 9, 1998. Presently it is being operated on an experimental basis from the Technology Bhavan with a low antenna height (approximately 45 feet only). The repeater can be accessed by any licensed ham radio operator operating in Delhi. Uplink frequency of the repeater is 145.00 MHz and the downlink frequency is 145.60 MHz. Mobile VHF ham radio operation in semi-duplex mode is thus made easier at Delhi. Even with its low antenna height, it is being accessed by hams from Ludhiana, Chandigarh, and Agra.

Watch out for the Vigyan Prasara's Stall at the first ever Indian Internet Book Fair  
1st January to 1st March 1999  
<http://www.indiabookfair.com/stall8>

... think scientifically, act scientifically ... think scientifically, act scientifically ... think scientifically, act ...

Published and Printed by Dr Subodh Muniandi on behalf of Vigyan Prasara, C-24, Connaught Institutional Area, New Delhi-16 & printed at Rakmo Press Pvt. Ltd. Ph. 3816252, 3815434, 3814588. Editor: Dr. Narinder K. Sehgal

Shri Baruah is the custodian of New Delhi's Amateur Radio Relay Station VU2DLR which was made operational funded by NCSTC in 1998

## A Better Prepared Amateur Radio Response

**H**ave you been listening to or reading the comments of the homeland security and emergency management leadership? Have you heard their remarks and thought about how they apply to amateur radio? This month we'll take a look at a few of the puzzle pieces and see if we're getting the message.

### Preparation and Preparedness

For decades the Federal Emergency Management Agency has been responsible for preparing and responding to disasters. FEMA has now been integrated into the Department of Homeland Security as the department's Emergency Preparedness and Response Directorate, under the day-to-day direction of Chief Operating Officer Ron Castleman and Undersecretary Mike Brown, who often speaks on the topics of preparation and preparedness.

Over the summer, Secretary of Homeland Security Tom Ridge spoke at a Public Preparedness Symposium. In his speech, he discussed a tabletop exercise in which he and 25 governors participated. According to Ridge, the exercise pointed out that in many cases you do not have all of the information that you would like to have, but "you have to do something. You can't wait until you have it all."

Ridge continued, "You can't secure the country from Washington, DC. You need partners all around the country in order to make it safer and more secure ... Homeland security must be a priority in every home, every city, every neighborhood across America."

"Our goal is to achieve seamless protection, a nation knit tightly together by shared vigilance, readiness, and communication," said Ridge. "Vigilance, readiness, and communication. And nowhere is this more important than in the area of emergency preparedness."

"No government entity, no organization, no information expert can replace individual responsibility. Citizens must choose to take actions," Ridge continued. "And our job is to make the choice an easy one. The success of our preparedness efforts and ultimately the entire homeland security mission depends on the involvement and work of individual citizens. Because if our communities are to rise to new levels of preparedness and security, each individual American must choose to make emergency planning a priority—a priority in our homes and our places of work and in our schools."

### Disasters Spawn Preparedness

According to Secretary Ridge, "If you ask people in south Florida or the Outer Banks of North Carolina about preparedness, they already know about buying supplies, keeping extra batteries handy, and even having a hurricane evacuation route planned. They get it. They hope they're not



*Homeland Security Secretary Tom Ridge: "We've laid out a public goal, and you've got to help me meet it!" (Department of Homeland Security photo)*

going to be hit by a hurricane. Chances are pretty good ... they may or may not, but they're not going to wait for chance. They get prepared."

"I'm just amazed," said Ridge, "that more people don't think of it in terms of providing some peace of mind to their own lives and to their own families." He wants to see people "respond when they have to without thinking about it," and says he feels that "there is a willingness on the part of Americans to take on this responsibility."

### Public Goal

Ridge continued, "We've laid out a public goal, and you've got to help me meet it, please....that by the end of this year, we want at least 50 percent of Americans to have accepted their responsibility to be ready. It's a communication plan; some form of training to assist at the time of a disaster, the kit set aside, the readiness kit. We need to get 50 percent by the end of the year, and I think we can get it done."

"The Department of Homeland Security will add strength to the existing Ready Campaign by launching two new endeavors, Ready for Business, Ready for Kids. It will continue to work with the Citizen Corps to encourage participation from families across America, whether by preparing family ready kits and emergency plans or volunteering to aid in disaster planning or engaging in CPR and training exercises to help people in a life threatening situation."

"I've been amazed at the number of people who have come forward to serve on Citizen Corps councils. All walks of life, all backgrounds, all communities. I think we're near 1000 communities that have a Citizen Corps. You meet some fascinating people. One fellow is in charge of the emergency radio network. You've got a bunch of ham radio operators in a tri-state area. He's got them networked together."

### Unification

Before September 11th every state, every city, and even individual response teams had their own pro-

\*c/o CQ magazine  
e-mail: <wa3pzo@cq-amateur-radio.com>



### Training and Response in India

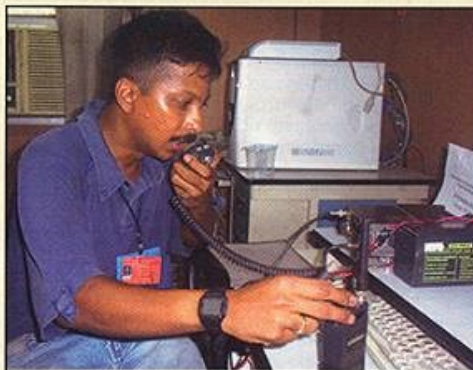
North America is not the only place amateur radio operators are active in emergency communications. Hams in India and other countries actively provide emergency communications support. This past summer, amateur radio operators participated in a simulated earthquake communications drill in the Northeast District of Delhi.

The Delhi Disaster Management Authority notified local hams about the "earthquake." Immediately, three teams of ham radio operators rushed to several critical locations to provide emergency communications. Stations were established at the Office of the Delhi Disaster Management Authority, Police Headquarters, Office of the Deputy Commissioner of Police, and the Divisional Commissioner's office.

According to Sandeep Baruah, VU2MUE, the communications teams brought mobile rigs, antennas, batteries, and solar-panel power backups. A digital communication setup was also established at the Divisional Commissioner's Office. Two-meter links were established on simplex when the local repeater "failed" because of the earthquake. HTs were also used for local communications. Messages were passed from the "disaster site" on behalf of the police and fire departments. Government officials visited the ham stations and felt that amateur radio can play a very important role in disaster communications. The hams were also able to demonstrate the use of Echolink in emergency communications and the potential for retrieving weather information.

In July, five members of the Mumbai Amateur Radio Society (MARS) sprang into action on behalf of the Ministry of Home Affairs and the United Nations Development Program. They were sent to the flood-ravaged areas of Bihar.

Nilesh Rathod, head of the local Amateur Radio Emergency Service, said, "There is a huge crisis in Bihar, but what is startling



Sandeep Baruah, VU2MUE, provides communications during a simulated earthquake exercise. (Photo courtesy of VU2MUE)

is that everyone seems used to the floods and the horrific living conditions."

He said that in the town of Sitamarhi the roads and rails were washed away. The local residents were building bamboo bridges to and charging people to cross them. That is how they recovered the cost of making the bridge and earned a living.

In order to get to his communication assignments, Nilesh would have to jump into a Jeep or risk wading through leech-infested waters.

cedures for emergency incidents. "For the first time," Ridge now says, "the National Response Plan provides a comprehensive roadmap for everyone to follow. As part of this plan, the National Incident Management System was introduced so that those involved in emergency response understand what their role is—and have the tools they need to be effective. It's the nation's first-ever standardized approach to incident management and response and it unifies federal, state, and local lines of government into one coordinated effort. This integrated system makes America safer by establishing a uniform set of processes, protocols, and procedures that all emergency responders—at every level of government—will use to conduct response actions."

### All-Star Playbook

Ridge describes the system as "the playbook for the NFL Pro-Bowl Game." "When you bring together the best players from 26 different teams," he explains, "a plan of 'blue 42, slant right, release' might mean one thing to the quarterback, another thing to the wide receiver, and yet another to the line-men. At the call of 'hike,' chaos might break out on the field. At the very least, the play won't be successful. Now everyone shows up on game day with the same playbook. They will have the same preparation, the same goals and expectations, and—most important—they will be speaking the same language. When the quarterback calls a play, everyone will know what they are supposed to do. And in this battle, safety is far better than two points—in fact, it is the only result worth anything at all. Of course, a plan is nothing without the people to execute it, and many of you will play a vital role should we ever have to put our plan into action."

### Ham Radio is Ready

Now let's take a look at some of the ways amateur radio is

[www.cq-amateur-radio.com](http://www.cq-amateur-radio.com)

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October 2004 • CQ • 65

## International visibility: Mock Emergency Communication Report by American Amateur Radio Journal CQ October 2004 issue

### Contribution to promotion of Do-It-Yourself Radio/Telecommunication/Electronics

- He organized approximately 400 Radio & Electronics Workshop all over the country for technical institutes and schools which include NIDM, LBSNAA, HIPA, IIT Kanpur, BITS Pilani, IIT Roorkee, IIT Guwahati, VIT Vellore, NIT Hamirpur, Manipal University Jaipur, Atharva College of Engineering, Mumbai, NSIT Delhi, Guru Nanak Dev Engineering College



Ludhiana, Royal Global University, Guwahati, UEM Jaipur, ABES Engineering Collge, Ghaziabad, Snow & Avalanche Research Institute, Chandigarh, UCOST, Sikkim S&T Council etc..

- He supported Emergency Communication during all the past large scale disasters in the country (Bhuj Earthquake, Tsunami, Nepal Earthquake) through Vigyan Prasars radio communication infrastructure.
- More than 100 officials under NIDM were trained and licensed in amateur radio last year.
- New Delhi's first amateur radio repeater station VU2DLR run by Vigyan Prasars which is operational and maintained by Vigyan Prasars for last 25 years which was a project granted by NCSCT. It caters to the relay need of licensed radio communicators.
- Coordinated with **NASA for 5 International Space Station –Astronaut & Student Interaction Programme** held at different schools of the country including Gujarat Science Centre

**विद्या मंदिर इंटर कॉलेज में 23 अगस्त को गुटेंगे कई स्कूलों के बच्चे**

## अंतरिक्ष यात्रियों से छात्र करेंगे बात

**मेरठ | वरिष्ठ संवाददाता**

शास्त्रीनगर स्थित विद्या मंदिर इंटर कॉलेज में 23 अगस्त को कई स्कूलों के छात्र अंतरिक्ष यात्रियों से बात करेंगे। यह कार्यक्रम एआरआईएसएस (अंतरराष्ट्रीय अंतरिक्ष स्टेशन स्थित अमेच्योर रेडियो संगठन), चंद्रशेखर विज्ञान क्लब के सहयोग से होगा। कार्यक्रम में छात्रों को करीब 10 से 12 मिनट अंतरिक्ष यात्रियों से बात करने का मौका मिलेगा। छात्र अंतरिक्ष यात्रियों से वहाँ कैसे रहते हैं, क्या खाते हैं, कैसे महसूस करते हैं आदि सवाल पूछेंगे। छात्र अंतरिक्ष यात्री रिकी आरनोल्ड से बात करेंगे। कार्यक्रम से पहले से चुने गए स्कूलों और कॉलेजों में जाकर बच्चों को अंतरराष्ट्रीय स्टेशन एआरआईएसएस के प्रति जागरूक किया जाएगा।

**ये हैं चुने गए स्कूल**

कैपिटल पब्लिक स्कूल, सरस्वती शिष्टा मंदिर, हर मिलाप इंटर कॉलेज, अंबेडकर इंटर कॉलेज, केंद्रीय विद्यालय डोंगरा लाइन समेत 15 स्कूलों के बच्चे कार्यक्रम में हिस्सा लेंगे। इस बारे में विज्ञान प्रचारक संजय शर्मा ने कहा कि हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है।

**कार्यक्रम का काफी समय से था इंतजार**

हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है। इसके लिए हमारे क्लब को बीनजे अवार्ड से विज्ञान प्रसार ने सम्मानित भी किया है। उक्त कार्यक्रम के लिए हमें काफी समय से इंतजार था। इसके लिए हमने बच्चों को पूर्ण तैयारी करा दी है।

संजय शर्मा, विज्ञान प्रचारक, चंद्रशेखर विज्ञान क्लब

स्कूलों में विज्ञान के कार्यक्रम के लिए मैं उत्सुक प्रयास करती हूँ। लगभग डेढ़ साल बाद हमें इस प्रोग्राम की अनुमति मिली है। पश्चिम में शायद यह पहला प्रोग्राम होने जा रहा है। रंजना गौड़, प्रधानाध्यापिका विद्या मंदिर इंटर कॉलेज

हमारी टीम के सदस्य हमें रेडियो के माध्यम से वैज्ञानिकों से बात कराएंगे। इसके लिए अमेच्योर रेडियो सिस्टम से तैयारी की जा रही है। संदीप बरवा, सीनियर वैज्ञानिक

### NASA-ARISS Astronaut Student Ham Radio Contact programme at Meerut

- Wrote more than 50 popular articles and do-it-yourself book "Radio Communication".
- **He mentored 400 students to assemble a toy radio transmitter at IISF-2019 Kolkata and established a Guinness World Record**

### Guinness World Record in Largest number of students building radio transmitter at IISF 2019 Kolkata

An event coordinated by Vigyan Prasars, the first of its kind Guinness World Record where largest number (490) of school students from different schools in Kolkata were successful in assembling a toy radio transmitter in just 10 to 15 minutes, where Guinness World Records Judge tested all the assembled radio transmitters to check whether transmissions took place one by one for more than an hour and finally declared that the record is established as his requisite of 250 functional units were exceeded by 268 units working. The record was set on 7th November, 2019 and certificate was formally handed over to the Union Science & Technology Minister.

Ref: Rajya Sabha TV's "Science Monitor" coverage of the event: <https://tinyurl.com/yask6qji>



PIB tweet: [https://twitter.com/PIB\\_India/status/1192379701802569728?s=20](https://twitter.com/PIB_India/status/1192379701802569728?s=20)

The PIB tweet of the event had total 984 likes and total social media impressions of the event created was 1286.





## Media coverage reference:

[https://www.gsl.net/vu2msy/documentation/Ham\\_Radio\\_in\\_Vigyan\\_Prasar\\_In\\_National\\_Media/](https://www.gsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/)

SEVEN SISTERS POST Guwahati, Friday, February 3, 2012

# THIRD EYE 9

REEMA GOWALLA

WITH sophisticated tablet computers, smartphones and millions of social networking sites floating around the Internet, communicating with friends and dear ones does look simple and convenient. But imagine a day when all of these are snapped off in the blink of an eye by a powerful earthquake. That is when an amateur or ham radio comes in handy.

Primarily a recreational activity, amateur radio enables operators — also known as hams — to pick up airwaves to discover a new voice from an unknown land. But it has the potential to be an immensely useful disaster management tool, especially in times of an earthquake, flood, cyclone and even tsunami.

The concept and importance of ham radio — which involves the use of a combined unit of transmitter and receiver, called transceiver, to facilitate a two-way communication between broadcasters across the world — is yet to grab most people's attention. But this does not discourage the small spirited community of operators who consider it a self-training activity involving technical creativity and experimentation with wireless communication.

Sandeep Baruah — principal scientific officer at Vigyan Prasat, department of science and technology — explains, "It's their love for radio science and the thrill of communicating with mostly self-assembled electronic devices that keep ham radio operators pursue their interest."

A portable amateur radio set can be operated using batteries and even solar power. And because only specific individuals attempt to connect with each other through radio waves, it hardly falls victim to jammed bandwidth and overloaded routers during natural calamities.

The hobbyists are referred to as amateurs because their systems are not included in commercial broadcasting or similar two-way radio services often used by the defence forces or firefighters. An avid ham himself, Baruah first established his station at Assam Agricultural University, Jorhat, in 1989. "It is an interesting method to discover new friends and disseminate knowledge among one another. Hams discuss almost everything under the sun, for which they run 'nets' at scheduled times and previously decided frequencies," he says.

Over decades, these enthusiasts have helped to form new industries by significantly contributing to science, technology, engineering and social services. But the crucial role they play during crises and natural disasters deserves special mention.

The techno-thinkers can quickly set up networks, helping speed up disaster relief. The 2004 tsunami cut nearly all communications with the Andaman Islands. Ham operators are not allowed to set up shop there because of security reasons, but a group of enthusiasts on vacation there did manage to get a station up and running. They then transmitted updates about the disaster to authorities in Delhi and other cities.

Baruah himself was in Delhi at the time and among those in touch with this group of hams in the Andamans. He says, "I had received messages from different parts of the country and abroad, which I relayed to those stationed at Port Blair and vice versa."

Hams also supported rescue activities after the 9/11 terror attacks, Gu-

## Hams: Riding the radio waves

This band of original social networkers continues an old tradition of licensed amateur broadcasting.



SAY HELLO: Sandeep Baruah demonstrating his amateur radio equipment in front of schoolchildren during a workshop.

jarat earthquake in 2001, North America blackout in 2003, Hurricane Katrina in 2005, Sichuan earthquake in 2008 and more recently the 2010 Haiti earthquake.

### Ham hum

Just a simple wire antenna connected to the transceiver is enough to attract ham radio frequencies. Licence bearers work using frequencies internationally allotted to them. If a particular wave is not already being used by another ham, it can be used to give a call to the operator in question.

However, the calling procedure should adhere to international radio regulations.

One can give a general, or CQ, call to all stations around the world with his or her assigned 'call sign' on air to legally spot a specific operator or station.

With advances in the field of electronics and technology, ham radio has also undergone a lot of changes over the years. Like mobile phone users, ham enthusiasts can now send text messages.

Operators can even connect their radios to the web. For example, ham equipment connected to the Internet in Guwahati can receive messages from other ham radio users in the city, while their conversation can be routed across the world through a system called Echolink.

Digital ham radio is a smart mode of

telligent enough to understand that the figure is not accurate, and so the radio connected to the computer will send back automated re-send request to the sender.

One can also send emails with the help of free software called 'Airmail', which functions more or less like Microsoft Outlook and can be useful at remote areas devoid of Internet facilities.

Sharing an instance, Baruah says, "I get messages from a sailor ham friend through such a system. He keeps sending stories while on long-distance voyages. He is supported by Winlink 2000, an all-volunteer project that arranges for sending emails through radio."

And there is more: hams can also receive images from space now. NASA launched a low earth orbit satellite recently enabling hams to lift pictures using a handheld transceiver and a tiny beam antenna called Yagi.

ISRO also launched a microsatellite called HAMSAT in 2005, enabling India to become one of the few countries in the world to launch an amateur radio satellite.

### Highs & lows

The story of ham radio starts at the beginning of the history of radio itself. In 1895 when Guglielmo Marconi, beginner of long-distance radio broadcasts began sending signals over vast lengths, he also became the first amateur radio broadcaster. That same year Nikola Tesla also sent transmissions in the US.

Indian scientist Sir J C Bose's experiments also contributed to the cause. Apart from providing voluntary help during national emergencies, hams are also said to have supported the Indian Independence movement.

Ham radio suffered a slowdown during global conflicts, when authorities suspended issuing licences and even asked operators to dismantle their devices fearing misuse of the technology by spies. However after the end of World War II, their number started growing again.

It is said that despite making significant contributions over the years, little has been done to support the enthusiasts or at least raise awareness about ham radio among the public. Getting a licence is an uphill struggle, and so there are just about 15,000 authorised and practicing ham radio users in India, with a mere seven in the Northeast.

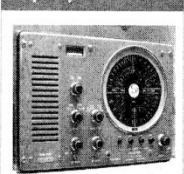
Following repeated petitions, the do-it-yourself activity was incorporated in the Central Board of Secondary Education (CBSE) syllabus in 2006, with occasional workshops being conducted on IIT campuses and other educational institutions across the nation.

Hams feel the scope of amateur radio is unlimited and so introducing the activity to youngsters could boost their mental faculties as well as impart a sense of unity and self-empowerment.

The wireless, planning and coordination wing (WPC), which forms part of the ministry of communications and information technology, is the regulatory authority of amateur radio in India. Together with controlling radio waves, the WPC also assigns call signs and issues licences.

Any citizen above the age of 12, and with basic knowledge in electronics and radio science, is eligible to become an authorised ham operator after he

### Frequency facts



■ In the early days of amateur radio, most professional operators would use the term ham to taunt the hobbyists, leading to the popularity of the synonym later on.

■ Rewarding the contributions of amateur radio, a postage stamp was issued in the US in 1964.

■ Fox hunting is an interesting activity in which hams use direction-finding techniques to locate hidden transmitters.

■ Hamfests and DX-peditions are among the countable events conducted on regular intervals to promote amateur radio in India.

■ A deceased amateur radio operator is generally referred to as a silent key.

or she clears a 100-mark exam, conducted by the WPC at various wireless monitoring stations across the country. There are two such stations in the Northeast too — at Dibrugarh and Shillong — but due to concerns over ham radio turning into a security threat if fallen into the wrong hands, the examination has not been conducted in the region over the past few years.

Ritu Mahanta, a guest lecturer at an engineering college near the city, agrees that ham radio is an efficient tool for communicating during emergencies. Unfortunately, his own experience at getting a licence has been unsavoury. He first applied for it in 1990 as a student, but was rejected. Over time, he applied several times, to no avail. He then filed an RTI in 2011. "Today I have the equipment, but can only hear hams communicating. Until I get my own call sign, I cannot transmit."

But enthusiasts here argue that ham radio is a fairly simple set up and any suspicious use can be easily detected with the help of direction finding antennas or the method of triangulation. They feel such irregularities could just be another instance of red-tapism and discrimination.

However it's a different story in most other states outside the region where the density of hams is higher, thanks to special clubs and related activities. Bangalore is also usually called the ham radio capital of India.

The hobbyists think more should be done to promote amateur radio in the region, especially for young citizens, who can serve as a band of communicators when the most active networking tools are knocked out by a natural calamity.



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SATURDAY, OCTOBER 27, 2012

# HAM radio enthusiasts to help in disaster management

HT Correspondent

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**DEHRADUN:** The two-day workshop on HAM radio training started at the Doon University on Friday with the announcement of forming a network of HAM radio enthusiasts under the aegis of Uttarakhand Council for Science and Technology (UCOST) and Disaster Mitigation and Management Centre (DMMC). This network would help during natural disasters and calamities by establishing radio links to connect to the people trapped in disaster affected areas.

The need for this network was felt in view of the problems in communication during the recent calamities at Uttarkashi and Rudraprayag where several people lost their lives.

Inaugurating the programme,

## THE NEED FOR THIS NETWORK WAS FELT IN VIEW OF THE PROBLEMS IN COMMUNICATION DURING THE RECENT CALAMITIES AT UTTARKASHI AND RUDRAPRAYAG

the vice-chancellor of Doon University professor VK Jain shed light on the benefits of the HAM radio and various courses being run by the university on disaster management and the role of teachers at the time of natural calamities.

Addressing the first technical session, HAM radio specialist from Delhi Karan Bakshi gave lecture on 'How to form two way HAM radio network in Uttarakhand, repeater net-

working techniques interlinking HAM radio to internet: Echolink'.

In the second technical session, scientist at Vigyan Prasar Sandeep Barua said the HAM radio could be used at the time of calamities without even internet facilities and other links which makes it unique.

He stressed on imparting training in various districts for its use.

He gave a lecture on 'An overview of radio networking and use of different types of HAM radio communication equipment'. All the 13 convenors of the districts of Uttarakhand for UCOST took part in the programme.

The programme was conducted by UCOST district coordinator and associate professor at DAV College, Prashant Singh.

INT'L CAMP

तो कुछ समय पूर्व प्रतिनिधित्व पर यहाँ लाने में सफल रहा था। संस्थान के अफसरों का कहना है कि कुछ समय पूर्व ही निगम से कुछ जेई उपलब्ध कराने के लिए शासन से अनुरोध किया गया था। उनके मिल जाने से गर्मियों में बेहतर जलापूर्ति व्यवस्था में मदद मिलेगी।

पास भी हो गए थे। अब इसे मुद्दा लेकर आड़ती गोलबंद होने की तैयारी में हैं। सरकार से नाराज व्यापारी संगठनों की बैठकों में रणनीति तैयार की जा रही है। ज्यादा गुस्सा अनाज के

मध्य जायें न कर सका। शासन के आश्वासन के बाद भी समस्या जस की तस है। आड़तियों की ओर से प्रदर्शन के साथ ही हड़ताल पर भी विचार किया जा रहा है।

सत्र आरंभ हो इस दौरान सड़क तक है। कांग्रेस ने दौरान धरना-दिने हैं। पार्टी सुरेंद्र कुमार पर हो रहे व्यवस्था की ख पर सरकार के महासचिव विन सरकार खासौर विकास कार्य स्कूलों में 10 शिक्षा के लिए उठाएगी। इस प्रदेश महासचिव सदन के बाहर जनमुहों को पूरे डबरा ल संघर्ष प्रदर्शन करने के ध्यानी के अनुस शुरू करने, सी शासनादेश जारी आंदोलनकारियों आदि को लेकर

## युवा महोत्सव के तीसरे दिन पोस्टर प्रतियोगिता आपदा प्रबंधन प्रशिक्षण जरूरी

(नियोजन) अनुसार वन इंटेक करने इते हुए यह किन, बजट प्रस्तावित नहीं हो मोद है कि लिए खासी जट रिलीज का कार्यवाही

### पत्र

विधि ने भी खि के लिए है। लेकिन सरकार की है। इन तीनों का प्रस्ताव सन्ध नहीं है। बहुगुणा भी खे गए पत्र में काल प्रस्ताव

देहरादून। युवा महोत्सव में वैज्ञानिकों ने आपदा प्रबंधन प्रशिक्षण की बेहद जरूरी करार दिया। युवाओं को आपदाओं से बचाव और संचार के लिए हैम-रेडियो जैसे साधनों के प्रयोग के लिए प्रशिक्षित किया।

प्रादेशिक विज्ञान एवं प्रौद्योगिकी युवा महोत्सव के तीसरे दिन आपदा प्रबंधन पर कार्यशाला में युवाओं को प्रशिक्षित किया गया। डीएमएमसी के निदेशक डा. पीयूष रौतेला ने कहा कि आपदाओं को रोकना संभव नहीं है। लेकिन समुचित प्रशिक्षण के जरिए इनके प्रभाव और नुकसान को कम किया जा सकता है। उत्तराखंड के संदर्भ में आपदा प्रबंधन महत्वपूर्ण विषय है। इसी कड़ी में प्रतिभागियों को हैम-रेडियो का प्रशिक्षण दिया गया। विज्ञान प्रसार के वैज्ञानिक संदीप बरुआ ने हैम-तकनीक की बुनियादी बातों की जानकारी दी और हैम-रेडियो का प्रदर्शन किया। आपदा के वक्त अन्य संचार माध्यमों के फेल होने पर हैम-रेडियो से ही संदेशों का आदान-प्रदान संभव है। दोपहर बाद के सत्र में मृदा, जल संरक्षण एवं अनुसंधान संस्थान के वैज्ञानिकों डा. केपी त्रिपाठी और डा. ए रायजादा ने वाटर हारवेस्टिंग और वनीकरण में जल-संरक्षण की भूमिका की जानकारी दी। पर्यावरण शिक्षा संस्थान लखनऊ के वैज्ञानिक डा. गंगवार ने पर्यावरण संरक्षण विषय पर छात्रों को संबोधित किया। इस दौरान 'प्रकृति संरक्षण में विज्ञान का योगदान' विषय पर पोस्टर प्रतियोगिता भी आयोजित हुई। प्रतिभागियों ने मालदेवता पहुंचकर वैकल्पिक ऊर्जा के बारे जानकारी हासिल की। विभिन्न सत्रों में डा. एसएस साहनी, डा. प्रशांत सिंह, डा. विनोद कुमार, डा. केपी सिंह, डा. एमपी सिंह, डा. संजय भूटानी और भवतोष शर्मा आदि प्रमुख रहे।



प्रशिक्षण : आपदा प्रबंधन के बारे में बताते प्रशिक्षक।

सत्र के देहरादून। बजट इंतजाम किए गए मीटर की परिधि आरंभ हो रहा है। मुकम्मल इंतजाम अतिरिक्त पुलिस डिफेंस कालोनी में

Portable radio communication demo during Youth Festival at Uttarakhand



# बड़े काम का है हैम रेडियो का डिजिटल रूप

कार्यालय संवाददाता

कानपुर

रेडियो और इंटरनेट का भला क्या संगम है। क्या बिना सरकारी नियंत्रण के अपना रेडियो सेटअप तैयार किया जा सकता है। बिल्कुल, टेक्निक में बतौर गेस्ट लेक्चरर आए विज्ञान प्रसार के साइंटिस्ट संदीप बरुआ ने हिन्दुस्तान को 'हैम रेडियो' के आधुनिक और डिजिटल रूप की जानकारी दी। बताया कि आपातकाल में जब सारे सिस्टम ध्वस्त हो जाते हैं, तब भी हैम रेडियो की मदद से सूचनाओं का आदान-प्रदान किया जा सकता है। हैम रेडियो को कंप्यूटर से और कंप्यूटर को इंटरनेट से जोड़कर टेक्स्ट मैसेजिंग, फाइल अपलोड-डाउनलोड की जा सकती हैं।

श्री बरुआ ने बताया कि दरअसल हैम रेडियो वायरलेस वेस्ड टू वे कम्युनिकेशन है। बोलचाल की भाषा में यह इंटरनेट ऑफ दि पास्ट है। विश्वभर में रेडियो पर बतियाने के शौकीन सालों से हैम रेडियो के दीवाने हैं। बहुत कम खर्च में और साधारण सी किट के साथ इसका प्रयोग किया जा सकता है। इसके लिए सरकार से लाइसेंस लेना जरूरी है।



संदीप बरुआ

सरकार की ओर से संचार पर पाबंदी लगाने, प्राकृतिक आपदा के दौरान भी हैम रेडियो पर संपर्क बना रहता है। इसीलिए इसे थर्ड पार्टी कम्युनिकेशन कहा जाता है। गुजरात में भुज में आए भूकंप के दौरान यह बहुत कारगर रहा। श्री बरुआ ने बताया कि इसका आधुनिक रूप और भी उपयोगी है। टू वे ट्रान्सीवर (ट्रांसमीटर और रिसीवर) को लैपटॉप के साथ इंटरफेस कर रेडियो वेक्स की मदद से इंटरनेट से जोड़ा जा सकता है। इसके बाद टेक्स्ट मैसेजिंग से लेकर फाइल्स की अपलोडिंग-डाउनलोडिंग सब संभव है। डिजीपीटर (डिजिटल रिपीटर) होना जरूरी है। हैम रेडियो का आधुनिक रूप वार्तालाप, मौज मस्ती के साथ ही कम्युनिटी सर्विस में भी कारगर है। देश में वेदर फोरकास्टिंग के लिए करीब 20 हजार स्टेशन की जरूरत है। हैं सिर्फ 300। हैम रेडियो को वेदर स्टेशन से जोड़कर किसानों को मौसम और फसल सम्बन्धी जानकारी देकर उत्पादन बढ़ाया जा सकता है।

च

भविष्य

हिन्दु

कानपुर

भविष्य में फैब्रिकेशन मोबाइल सेन्सर, आकार में उन्हें चुन रखा और इस तक सस्ते और विश्वसी कानपुर गुरु नॉलेज आयोजित लेने आए फैब्रिकेशन 10 वर्षों चिप तैय घर, दप चाबियों किया ज अलग मिलेगा ज्यादा तकनीक

देहरादून । शनिवार । 27 अक्टूबर 2012

# अमर उजाला

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अमर उजाला

देहरादून । शनिवार । 27 अक्टूबर 2012

देहरादून

## हाई क्लास हॉबी बन रहा हैम रेडियो

दून विवि में हैम रेडियो प्रशिक्षण कार्यशाला का आयोजन

● अमर उजाला ब्यूरो

देहरादून। अगर कोई कहे कि उसकी हॉबी हैम रेडियो है तो हैरान मत होइए। फेसबुक और आइक्यू की तरह ही हैम रेडियो भी उभरती हाई क्लास हॉबी है। इसमें आप एक दूसरे को देख नहीं सकते, लेकिन किसी भी अन्य हैम रेडियो लाइसेंसधारी से फ्री ऑफ कॉस्ट बातें जरूर कर सकते हैं। मुंबई दिल्ली आदि में हैम रेडियो का प्रयोग हॉबी के रूप में प्रसिद्धी पा रहा है।

हैम रेडियो का सबसे बड़ा उपयोग है आपदा प्रबंधन में। जब मोबाइल टावर या सेटलाइट व्यवस्था काम नहीं करती तो हैम रेडियो बेहतर है। इसके बारे में दून विवि में एक कार्यशाला का



हैम रेडियो प्रशिक्षण कार्यशाला में उपस्थित गणमान्य लोग।

आयोजन किया गया। यूकॉस्ट, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार, आपदा प्रबंधन एवं न्यूनीकरण केंद्र और दून विवि के संयुक्त तत्वाधान में शुकवार को इस दो दिवसीय कार्यशाला का उद्घाटन हुआ। मुख्य अतिथि यूकॉस्ट के महानिदेशक डॉ. राजेंद्र

डोभाल ने बताया कि कार्यशाला का उद्देश्य उत्तराखण्ड के सभी 13 जिलों में हैम रेडियो लाइसेंस धारकों को नई दिशा देने और उन्हें विज्ञान एवं प्रौद्योगिकी संचार से जोड़ना है। कार्यशाला में कुलपति प्रो. वीके जैन, संदीप बरुआ, करन बख्शी, डॉ. डीपी डानियाल, डॉ.

दून विवि में होगा प्रशिक्षण केंद्र

दून विवि के कुलपति प्रो. डॉ. वीके जैन ने हैम रेडियो और आपदा प्रबंधन प्रशिक्षण के लिए दून विवि में ही केंद्र खोलने का प्रस्ताव दिया। जिसे यूकॉस्ट के महानिदेशक डॉ. राजेंद्र डोभाल ने सहर्ष स्वीकृत करते हुए दून विवि में केंद्र स्थापना की घोषणा की। इस केंद्र में हैम रेडियो लाइसेंस प्राप्त करने के बारे में जानकारी प्राप्त की जा सकेगी। आगामी मई जून या जुलाई 21 दिवसीय ट्रेनिंग कार्यक्रम चलाया जाएगा, जिसके बाद हैम रेडियो लाइसेंस की परीक्षा भी होगी।

सरिता खंडका डॉ. प्रशांत सिंह, डॉ. बीपी पुरोहित मौजूद रहे।



## हैम रेडियो के वैज्ञानिक उपयोग से बचेगी जान

देहरादून। यूकॉस्ट और ईएमआरआई 108 ने साथ मिलकर शनिवार को विज्ञान प्रसार नोएडा की तकनीकी सहायता से हैम रेडियो पर विशिष्ट व्याख्यान और प्रदर्शन कार्यशाला का आयोजन किया। उत्तराखंड के दूरस्थ क्षेत्रों में मोबाइल नेटवर्क के काम न करने पर विकल्प के रूप में हैम रेडियो के उपयोग की जानकारी दी। कहा कि इसके वैज्ञानिक उपयोग से लोगों की जान बचाई जा सकेगी।

कार्यशाला में विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरुआ ने कहा कि पूरे उत्तराखंड में 2-3 हैम रिपिटर स्टेशन लगाकर यूकॉस्ट की सहायता से बने 32 हैम रेडियो लाइसेंस होल्डर के नेटवर्क से मोबाइल एंबुलेंस, ईएमआरआई कॉल सेंटरों के संपर्क में रह सकती है। कार्यशाला में यूकॉस्ट के वैज्ञानिक अधिकारी डॉ. डीपी उनियाल, डॉ. बीपी पुरोहित, डॉ. आरएस भारद्वाज, जिला समन्वयक डॉ. प्रशांत सिंह, रवींद्र, भास्कर, निर्मल रावत आदि रहे।

## CITY BUZZ

# Ham Radio network to be set up in Kaushambi

The Kaushambi Apartments Residents Welfare Association (KARWA), announced a VHF/UHF ham radio repeater network soon to be made functional at Kaushambi under the disaster mitigation plan. An awareness programme and workshop on

ham radio (Amateur Radio) was organised by Kaushambi Apartments' Resident Welfare Association (KARWA) at Nanda Apartments, Ghaziabad on October 11 where children and senior citizens of the area got an opportunity to see the functioning of various ham

radio technologies.

Sandeep Baruah, scientist-D from Vigyan Prasas (Department of Science and Technology; Govt. of India) deliberated a presentation emphasising the need to establish a ham radio and electronics club for the children of the area which will help establishing an alternative radio communication network as a hobby and public service activity.

Various instruments were installed at the roof of the 14th storied Nanda Apartments and its functioning was explained with the help of Vigyan Prasas Repeater Station (VU2DLR) located at South Delhi.

Hams (Amateur Radio Hobbyists) from all over the NCR region participated and assisted the programme by making radio contacts with the temporary ham radio station installed at Nanda apartments. Children were thrilled to exchange pleasantries with senior hams. Francis

During the deliberation, Sandeep Baruah (Scientist-D, Vigyan Prasas, DST) emphasised the formation of the people's own ham radio alternative radio communication network as a 'hobby' and as a 'do-it-your-

their own communication network without depending on other service providers. To establish an effective communication to be functional, it was suggested that several low cost UHF/VHF Ham Cross



Rebello (Ham call VU2XLZ) talked at length to the children via the ham radio setup from his ham radio station located at Green Park. Students were delighted to talk to him via the two-way ham radio communication system. Hams from as far as Gurgaon also came on-the-air to assist the demonstration.

self activity', which would also be useful in the event of any kind of emergency, because when the public telephone network and cellular telephone network break down during large scale disasters, people with ham radio licences and their personal radio communication equipments would be able to maintain

Band Repeater station may be installed on top of all the skyscrapers at Kaushambi. A similar setup was demonstrated to the children. A Ham Radio Club is in the process of formation where hams located near Kaushambi would provide their voluntary support in training the children and other interested people.

Happy Diwali

**श्री Sai Shah**

**FURNITURE & INTERIORS**

SPL. IN: WARD ROBES, ALMIRAHs, MODULAR KITCHENS, DOUBLE BEDS, SHOW CASES, T.V. CABINET ETC.

Workshop at Ghaziabad



# हिन्दुस्तान

## तरक्की को चाहिए नया नजरिया

शनिवार, 27 अक्टूबर 2012, देहरादून, पांच प्रदेश, 18 संस्करण, नगर संस्करण

[www.livehindustan.com](http://www.livehindustan.com)

05 • देहरादून • शनिवार • 27 अक्टूबर 2012 • हिन्दुस्तान

## उत्तराखंड में जरूरी है हैम रेडियो का प्रसार

देहरादून | कार्यालय संवाददाता

उत्तराखंड जैसे विषम भौगोलिक स्थिति वाले इलाकों में आपदा के समय हैम रेडियो सैकड़ों लोगों की जान बचा सकता है। इसलिए प्रदेश में ज्यादा दुवाओं को हैम रेडियो का इस्तेमाल करना आना चाहिए। यह विचार शुक्रवार को दून विश्वविद्यालय में शुरू हुई कार्यशाला में विशेषज्ञों ने व्यक्त किए।

कार्यशाला का आयोजन यूकोस्ट और आपदा प्रबंधन एवं न्यूनीकरण केंद्र की ओर से किया जा रहा है। उद्घाटन करते हुए यूकोस्ट के महानिदेशक डॉ. राजेंद्र डोमाल ने कहा कि प्रदेश के सभी जिलों में हैम रेडियो संचालन लाइसेंस जारी किए जाने चाहिए। दून विधि के कुलपति प्रो. वीके जैन ने कहा कि आपदा के समय जब मोबाइल व संचार के अन्य

### विशेषज्ञों की राय

- दून विश्वविद्यालय में यूकोस्ट की कार्यशाला शुरू
- आपदा के समय हैम रेडियो की उपयोगिता पर चर्चा

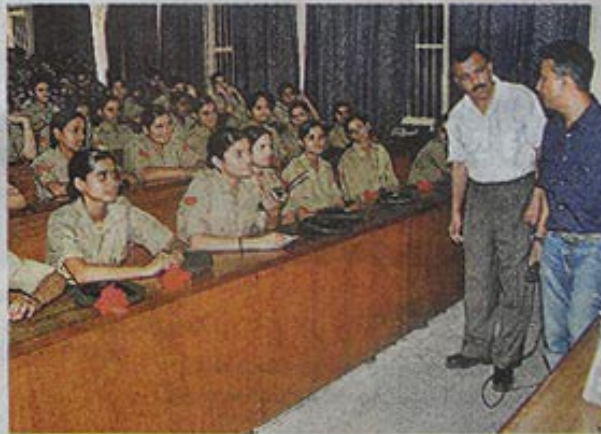
संसाधन जवाब दे जाते हैं तो हैम रेडियो ही काम आ सकता है। संदीप बरुआ का कहना था कि इसके जरिए मुश्किल हालात में लोग आसानी से सम्पर्क साध सकते हैं। डॉ. सरिता खंडका, डॉ. भवतोष शर्मा, डॉ. डीपी उनीवाल, डॉ. बीपी पुरोहित, डॉ. सुरेंद्र सुथर, डॉ. श्रीधर, डॉ. राजेश कुमार, डॉ. केपी सिंह, डॉ. वृजमोहन शर्मा, डॉ. बीना पांडे, डॉ. आलोक कुमार, डॉ. गुलशन कुमार दीग्रा, डॉ. अनिल नौटियाल मौजूद थे। संचालन डॉ. प्रशांत सिंह ने किया।

# शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना

भास्कर न्यूज़ | हिसार

हरियाणा कृषि विश्वविद्यालय में चल रहे एनसीसी शिविर में कैडेट्स को गुरुवार को हैम रेडियो का प्रशिक्षण दिया गया। विज्ञान प्रसार केंद्र दिल्ली से आए वरिष्ठ वैज्ञानिक संदीप बरुआ ने सभी कैडेट्स को बताया कि इसके माध्यम से बिना किसी मासिक बिल के फ्री में बात, लाइव चैट, मैसेजों का आदान प्रदान किया जा सकता है।

उन्होंने बताया कि हैम रेडियो की एक मात्र ऐसा संचार का साधन है, जो कि हर परिस्थिति में काम करता है। फिर चाहे वह बाढ़ की त्रासदी हो अथवा सूनामी का सफाया। इससे कोई भी आदमी संचार साधनों से जुड़ा रह सकता है। वैज्ञानिक ने अपने प्रयोगों से भी कैडेट्स को परिचित करवा कि किस तरह से वायरलेस सेट के माध्यम से किसी स्थान विशेष का



हिसार. एचएयू में कैडेट्स को हैम रेडियो के बारे में जानकारी देने प्रशिक्षक।

तापमान जान सकते हैं अथवा वह कितनी दूरी पर किसी एंगल पर है। इतना ही नहीं वायरलेस से सेट कैसे मैसेज भेजा जाए।

किस तरह से आरकुट, याहू के तरीके से लाइव चैट किया जाए (उन्होंने बताया कि यह सब मुफ्त में मिलता है बस इसकी एक ही शर्त है कि इसे उपयोग करने

वालों की संख्या ज्यादा से ज्यादा हो। उन्होंने बताया कि इस समय देश में आबादी अरबों पार कर गई है लेकिन हैम रेडियो का उपयोग 15 हजार से भी कम लोग कर रहे हैं। कई सेलिब्रेटी ने तो हैम रेडियो ले तो लिया है लेकिन इसका उपयोग बहुत कम ही लोग कर रहे हैं।

## कर्मचारियों का प्रदर्शन, ज्ञापन सौंपा

Training for NCC at Hisar





# the pioneer

DEHRADUN | SATURDAY | OCTOBER 27, 2012

## HAM RADIO TRAINING WORKSHOP STARTS

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रविवासरय

# हिन्दुस्तान

तरक्की को चाहिए नया नजरिया

पन के दौरान गुमराह कर रही गैस एजेंसियां

पेज 03

अब डीपीसी को लेकर कर्मचारी आए आए

28 अक्टूबर 2012, देहरादून, पांच प्रदेश, 18 संस्करण, नगर संस्करण

[www.livehindustan.com](http://www.livehindustan.com)

## हैम रेडियो पर दिल्ली हुई बात

देहरादून। स्थान: धनोली में सुर्कड़ा देवी मंदिर, समय: दोपहर 2:30 बजे। वैज्ञानिक संदीप बरुआ ने हैम रेडियो के माध्यम से दिल्ली में बैठे अपने दोस्त से हालचाल पूछा। लोग यह देख हैरान रह गए कि बिना किसी टावर के भी दो लोग आपस में बात कर रहे हैं। हैम रेडियो की उपयोगिता बताने को आयोजित कार्यक्रम के दूसरे दिन यह प्रयोग किया गया।

यूकॉस्ट और दून विश्व की ओर से आयोजित गोष्ठी में पहले दिन प्रतिभागियों को हैम रेडियो का इस्तेमाल सिखाया गया। दूसरे दिन उन्हें सुर्कड़ा देवी मंदिर ले जाया गया। वहां अस्थायी रिस्लीवर लगाकर विभिन्न स्थान से विभिन्न हालात में दूसरी जगहों पर संपर्क स्थापना का तरीका सिखाया।

वैज्ञानिक संदीप बरुआ ने कहा कि राज्य के विभिन्न हिस्सों और शहरों में हैम रेडियो के लाइसेंस दे दिए जाएं तो आपदा के समय सैकड़ों जानें बचाई जा सकती हैं। उन्होंने बताया - यूकॉस्ट के महानिदेशक डॉ. राजेंद्र डोभल ने धनोली में हैम रेडियो रिस्लीवर लगाने पर सहमति दे दी है।

इस मौके पर डा. प्रकाश सिंह, डॉ. गुलशन लीरा, डॉ. अनिल नौटियाल, डा. विनोद कुमार, डा. कमला जोशी, डॉ. विनोद कुमार, अजय राजपूत, बुनेश राठी, संगीता नौटियाल, डा. कमल जोशी, एससी पांडेय, निर्मल रावत, सुरेंद्र भनवाल, डॉ. ललित जोशी, भावनी पिलवाल आदि उपस्थित रहे।



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RUSSIA BEYOND



# RCSC lauds Gagarin's pioneering flight and achievements

APR 14, 2016 RIR NATALYA RUDAKOVA



A function was held on April 12 in New Delhi.  
RCSC





वर्ष 16 अंक 178  
पृष्ठ 22+4=26  
देहरादून, रविवार  
28 अक्टूबर 2012  
नगर संस्करण  
मूल्य ₹ 3.00

विश्व का सर्वाधिक पढ़ा जाने वाला अखबार

# दैनिक जागरण

## हैम रेडियो के जरिये संवाद स्थापित

जागरण प्रतिनिधि, देहरादून: यूकोस्ट और केन्द्रीय विज्ञान एवं प्रौद्योगिकी विभाग द्वारा आयोजित दो दिवसीय हैम रेडियो विन्यास प्रशिक्षण कार्यशाला के तहत शनिवार को पचास प्रशिक्षार्थियों को मुसुरी, धनोली और सुरकंडा देवी मंदिर का भ्रमण कराया गया। इस दौरान प्रशिक्षक विशेषज्ञ संदीप बरुआ ने उक्त स्थानों से हैम रेडियो के माध्यम से दिल्ली, गुडगांव व नोएडा से संवाद स्थापित किया। संदीप बरुआ ने सुरकंडा देवी मंदिर में हैम रेडियो का स्थाई एंटीना लगाने की अनुमति देने के लिए यूकोस्ट के महानिदेशक डॉ. राजेंद्र डोभाल का आभार व्यक्त किया। उन्होंने कहा कि उत्तराखंड में एमबीपीजी कॉलेज हरिद्वारी, राजीव गांधी नवीन विद्यालय देहरादून में स्थापित हैम रेडियो आपदा संचार केंद्रों को अधिक मजबूत किया जाएगा। इसके साथ ही सभी जिलों में आपदा प्रबंधन के तहत सहायता के लिए हैम रेडियो लाइसेंस धारकों का नेटवर्क सुदृढ़ किया जाएगा।



# the pioneer

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देहरादून, रविवार

31 मई 2009

देहरादून संस्करण

वर्ष 9 अंक 24

पृष्ठ 12

आमंत्रण मूल्य 1.00 रु

# शाहटाइम्स

ईएमआरआई व यूकोफ्ट ने किया गोष्ठी का आयोजन

## चिकित्सा सुविधा में हेम रेडियो की उपयोगिता अहम्

विशेष संवाददाता

देहरादून। यूकोफ्ट एवं ईएमआरआई 108 में चिकित्सा सुविधा के क्षेत्र में हेम रेडियो के उपयोग पर संयुक्त गोष्ठी का आयोजन कर गहन विचार विमर्श किया।

इस तकनीकी कार्यशाला में प्रमुख वक्ताओं में यूकोफ्ट से निदेशक डॉ. राजेन्द्र डोमाल, ईएमआरआई-108 के प्रमुख कार्यकारी अधिकारी अनुप नौटियाल तथा विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरुआ ने उत्तराखण्ड के सुदूरवर्ती क्षेत्रों में फोन तथा मोबाइल नेटवर्क के काम नहीं करने का बाधल या मरीजों के फोन प्राप्त न हो पाने के विकल्प के रूप में हेम रेडियो के उपयोग पर विचार व्यक्त किए तथा चर्चा में भाग लिया। श्री संदीप बरुआ ने समाधान प्रस्तुत करते हुए कहा कि पूरे उत्तराखण्ड में 2-3 हेम रिपिटर स्टेशन लगाकर यूकोफ्ट की सहायता से 32 हेम रेडियो लाईसेंस होल्डर को नेटवर्क द्वारा मोबाइल एम्बुलेंस ईएमआरआई काल सेंटर्स के सम्पर्क में रह सकेंगी है। इसकी सहायता से एम्बुलेंस साइट पर एम्बुलेंस भेजने के लिए विभिन्न स्थानों पर हेम रेडियो सपोर्ट सिस्टम का प्रयोग किया जाएगा। इसके अनुप्रयोग का परीक्षण करने के लिए शीघ्र ही ईएमआरआई एक संचार रहित मरीज की अधिक संख्या वाला क्षेत्र देखकर यूकोफ्ट तथा विज्ञान प्रसार की सहायता से हेम रिपिटर स्टेशन (मानव जित) की स्थापना करेगी तथा परीक्षण एम्बुलेंस में हेम रेडियो की सहायता से संचालित एपीआरएस अटोमैटिक पोजिशनिंग सिस्टम लगाकर सम्पूर्ण नेटवर्क का उपयोग परखा जाएगा। यदि यह परीक्षण सफल रहता है तो यह पूरे उत्तराखण्ड में लागू करके दूर-दराज के क्षेत्रों के मरीजों के लिए स्वास्थ्य सुविधाएं समर्थ पर प्राप्त करने का एक उपयोगी वैज्ञानिक माध्यम सिद्ध होगा।

इस कार्यशाला के उद्घाटन सत्र में अपने सम्बोधन में डॉ. राजेन्द्र डोमाल, निदेशक यूकोफ्ट ने कहा कि अन्य उपयोगी के साथ ही स्वास्थ्य सेवाओं के लिए हेम रेडियो के वैज्ञानिक उपयोग से दुर्घटना में घायलों व तुरंत चिकित्सकीय सुविधा की आवश्यकता वाले मामलों में जरूरत पड़ने की जान बचाने में उपयोगी सिद्ध होगा। डॉ. डोमाल ने कहा कि हेम रेडियो का एम्बुलेंस गाड़ियों की स्पीड, दिशा, मुख्यालय से दूरी तथा एमएमएल भेजने में प्रयोग से आपदा संचार के क्षेत्र में शीघ्र ही सफलता हासिल होगी।

ईएमआरआई के मुख्य कार्यकारी अधिकारी अनुप नौटियाल ने इस अवसर पर एक व्याख्यान दिया जिससे उन्होंने 108 एम्बुलेंस सेवा के उत्तराखण्ड में स्थापना से अब तक के विकास व भविष्य की योजनाओं के साथ ही विभिन्न विभागों के साथ किए समन्वय के बारे में बताया। उन्होंने अपने अनुभवों के आधार पर उन क्षेत्रों के बारे में बताया जहाँ के मरीजों की जान मोबाइल नेटवर्क न होने के कारण चिकित्सा सुविधा न पहुँचने की वजह से जोखिम में रहती है। श्री नौटियाल ने कहा कि यूकोफ्ट तथा विज्ञान प्रसार की सहायता से हेम रेडियो सम्पर्क साधने का माध्यम बने ताकि सभी मरीज या बाधल संदेश भेजकर काल सेंटर की सहायता से एम्बुलेंस को बुलाकर चिकित्सकीय मदद व प्राथमिक चिकित्सा प्राप्त कर सकें।



# हिन्दुस्तान

नगर वर्ष 74, अंक 130, 20 पेज+6 पेज नई दिशा

दून, ज्येष्ठ शुक्ल पक्ष एकादशी, विक्रम सम्वत् 2066, बुधवार, 3 जून 2009, मूल्य 3.00 रुपए

## मरीजों के मददगार बनेंगे हैम रेडियो

देहरादून। उत्तराखंड विज्ञान प्रौद्योगिकी परिषद ईएमआरआई मिलकर मरीजों के लिए एक नई पहल करने जा रहे हैं। इसके तहत किसी क्षेत्र को चुनकर प्रशिक्षित हैम रेडियो संचालकों की मदद से घायल व मरीजों की सूचना 108 एम्बुलेंस को दी जाएगी। इसके लिए एक्सीडेंट साइट पर एम्बुलेंस भेजने को विभिन्न स्थानों पर हैम रेडियो सिस्टम स्थापित होंगे।

NEW DELHI SUNDAY FEBRUARY 4 2001

## EARTHQUAKE

Local administration carrying on demolition of damaged buildings in Bhuj. PHOTO: MISHAN SWARUP

# From sinking Titanic to quaked Bhuj, ham picks up SOS

Saurabh Shukla  
New Delhi, February 3

THEY MADE news for the first time when they beat everybody by intercepting an SOS from a sinking Titanic in 1911. They were in action during the Morvi floods of 1979, Gulf War, Orissa cyclone, and the Latur and the Uttarkashi earthquakes. They are back again aiding the Gujarat relief effort in whatever manner they can. They are the ham radio operators.

After trying for two days to track his brother in Gandhidham, Jodhpur's VK Banchal despaired. But then somebody

suggested he should try 'ham' radio operation network in Delhi. He did. A few hours later, his telephone rang. "Your brother Sanjay is safe," said the caller.

The same ham network helped Delhi's Dr Sujata get in touch with her husband in Anjar, one of the worst hit areas.

High frequency radio transmitter/receivers are the standard equipment for all hams, who have to pass a stiff international test to get their licence. The word 'ham' is said to have been taken from the first letters of the three pioneers of radio communications: H (from Hertz), A (from Armstrong, inventor of Oscillator circuit), and M (from Marconi).

Functioning out of a tiny shack in Delhi with whatever little manpower they have, these 'hams' have been sending 'emergency disaster communication messages' to the Gujarat amateur radio operators' network.

They get back-up support from other individual hams in Delhi, who are keeping track of the government agencies' requirements plus passing on the distress messages.

Says Sandeep Baruah, one of the hams associated with the Delhi station, "We have five base stations operating — in Anjar, Bachau, Bhuj, Gandhidham and one located right inside the Chief

Minister's residence. There are some mobile units too, who quickly relocate themselves to send us the replies to our queries about the situation in remoter parts of the state."

The Delhi hams have been flooded with calls from all parts of India. "Some from Bihar, Bengal, Rajasthan and even from areas in Gujarat," says Baruah. But it's not an easy job tracking people and relaying messages.

Especially for those operating out of remote areas of Gujarat. "There's no power in many areas. Our radio sets can't run for very long on batteries alone," says a Gujarat ham, Dalbir Singh. A big draw

on battery power is adverse weather. "Often messages have to be re-routed through hams in Mumbai or Hyderabad as direct communication is not possible," he explained.

"For most hams, this is purely voluntary work," explains Dr Kamble of the DST, agreeing that there was need for more hams in the country. Barely 2,000 of the 10,000 licences are active now. A related factor restricting growth of ham-culture in India is government's lack of support, lamented an enthusiast. Reason: Costly equipment — mostly imported (nothing less than Rs 40,000) and no relaxation on customs duties.

## Fresh round of tremors spreads panic among quake survivors

Rathin Das  
Ahmedabad, February 3

A FRESH tremor, measuring 5.0 on the Richter scale, this morning coupled with the doomsday prediction of a local astrologer spread panic among the locals here.

The self-styled astrologer, Ambhal Damodardas Patel, who

mal with a few shopkeepers raising shutters.

Minister of State for Home Haren Pandya urged the panic-stricken people not to succumb to imaginary fears. He announced that 50 teams of engineers and

**Cases registered**

builders and architects would have nothing to do with these teams, the Minister asserted.

Meanwhile, the State Government has decided to build a memorial for the school children who were killed while marching through Anjar on Republic Day. An additional ex-gratia payment of Rs 50,000 would be made to the

## Sharjah trip could still be a reality

EVEN THOUGH Union Sports Minister Uma Bharti did not approve of India participating in the three-nation tournament in Sharjah for the quake victims in Gujarat, sources close to the Ministry of External Affairs and the PMO said the February 8-11 tournament could still be a reality. The sources said, Minister of External Affairs Taswant Singh

## No scientific link between corpses, epidemics: WHO

DISMISSING MYTHS in the aftermath of natural disasters, the World Health Organisation (WHO) has said that communicable diseases do not usually occur after earthquakes. However, epidemic risk factors were the rupture of water sanitation, interruption of public health services such as immunisation and lack of control

WHO report, after the Turkey quake, said.

It said the health hazard associated with bodies was negligible and the contamination may occur in very limited cases when the corpses are in contact with the water system and transmit gastro-enteritis.

"A relationship between cadavers and epidemics has never been scientifically demonstrated,"

Bhuj Earthquake Emergency Communication News in Hindustan Times





## NDTV Coverage of Emergency Radio Communication

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Monthly Newsletter of Vigyan Prasas

**DREAM** 2047

June 2002 Vol. 4 No. 9

### VP News

#### AMATEUR RADIO (HAM RADIO) PROMOTIONAL ACTIVITIES

Vigyan Prasas has been continuing with its effort to popularize the hobby of ham radio amongst school children. On April 24, 2002, a lecture-cum-demonstration programme on ham radio was organized by Vigyan Prasas for the students of Springdale School, Dhaulakuan, New Delhi. It was an exciting experience for the young students to listen to and at the same time talk to an unknown person located hundreds of kilometers away through short wave radio. Shri Dattatry Deogaonkar, VU2DSI, a ham radio operator located in Ahmednagar, Maharashtra responded to the call given from VU2NCT club station of Vigyan Prasas and interacted with the children. Students from sixteen different schools in and around Delhi got an opportunity to attend another such programme organized on May 3, 2002, on the occasion of a science fair 'Indradhanush-2002'. The science fair was organized by SEARCH (Society for Science & Environment, Awareness, Research, Communication & Heritage). The students interacted with Shri Dattatry for almost an hour exchanging varieties of information through the amateur radio club station VU2NCT/MUE. The demonstration programme was assisted by Shri Sushil Dhingra, VU2LFA (New Delhi) by way of on-the-air contact with VU2NCT/MUE. Students from Mount St. Mary's School, Delhi Cantt. attended another awareness programme organized by Vigyan Prasas on May 8, 2002. Shri Muktesh Chander, VU2HJZ, an IPS official with the Delhi Police, also participated in the programme. The utility of amateur radio from the disaster mitigation point of view was explained by him to the students. Mrs. Bharthi Prasad, VU2RBI (New Delhi) and Shri Sushil Dhingra, VU2LFA (New Delhi) assisted the programme by establishing radio contact with the demonstration station VU2NCT/MUE.

Ham Radio demonstration to Mount St. Mary's School, Delhi Cantt

Ham Radio demonstration at "Indradhanush-2002".

### Inside

#### EDITORIAL

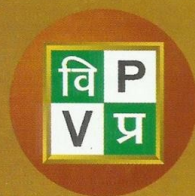
- Charles Robert Darwin
- "AIDS is more than a medical problem"
- The Universal Physical Constants and the Cluster Hypothesis
- Agharkar Research Institute, Pune
- Richard Sonnenfeldt
- Recent Developments in Science & Technology

...think scientifically, act scientifically ... think scientifically, act scientifically ... think scientifically, act...

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## Training in a Delhi School





# DREAM

## 2047

July 2006

Vol. 8

No. 10

Price: Rs. 5.00

## VP News

### State Level Ham Radio Training Programme in Uttaranchal

A state level ham radio training programme was organized by Vigyan Prasar at Dehra Dun jointly with the Uttaranchal State Council for Science & Technology (U-COST) and National Service Scheme (NSS), Uttaranchal, from June 7 to 29, 2006.

Uttaranchal being in a highly seismic zone, this effort was initiated to impart radio communication skills to the NSS volunteers and to set up a ham radio communication network for emergency communication. Fifty-two Programme Officers and volunteers of the National Service Scheme (NSS) from thirteen districts of Uttaranchal were trained for the Amateur Radio Licensing examination.



NSS volunteers listening to ham radio transmissions during a demonstration programme

### Workshop on Innovative Experiments in Physics

A two day workshop on 'Innovative Experiments in Physics' was held at Army Public School, Lucknow on 30 and 31 May, 2006. The workshop was inaugurated by Prof. V.D. Gupta, former Vice Chancellor of Allahabad University. Ms K. Dasgupta Misra, Vigyan Prasar welcomed the participants and made a presentation on Vigyan Prasar and its activities. The workshop was attended by more than 35 teachers of physics from various districts of U.P. The participants were from Varanasi, Allahabad, Lucknow, Kanpur, Gorakhpur, Jaunpur, Barabanki, and so on. After the inauguration, the demonstration of innovative experiments in Physics was shown by Shri Mukesh Roy of IIT, Kanpur. More than twenty five innovative experiments in Physics were demonstrated to the participants. Teachers appreciated the workshop and

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The training programme was inaugurated on June 7 by Dr. Rajendra Dobhal, Director, U-COST. Dr. V.B. Kamble (VU2VBK), Director, Vigyan Prasar and Shri B.K. Tyagi, Scientist 'D', Vigyan Prasar attended the inaugural ceremony as special guests. Shri Sandeep Baruah (VU2MUE), Scientist 'C', Vigyan Prasar was the main resource person during the entire training period. A few hams from

Contd. on page...21



Teachers participating in the workshop

... think scientifically, act scientifically... think scientifically, act scientifically... think scientifically, act...



topersonal computers, use digital modes such as PSK31 and PACTOR that enable radio-to-radio emailing, including text and pictures. "But older hams still take pride in using the Morse Code," says Sofi.

### ALTERNATIVE MODE

**Vigyan Prasara**, a Delhi-based autonomous Institute under the Union government's department of science and technology, organises a range of activities to promote ham radio, including technology demonstration and lectures, and offers study material to aspiring hams to prepare for The Amateur Station Operator's Certificate (ASOC) licensing examination conducted by the Department of Telecommunications.

"Ham radio is far from dying; in the past few years, there has been a rise in the number of ham meets, festivals and other such events. We get many requests from all over the country for study material on ham radio. We are trying to promote it as an alternative communication system," says Sandeep Baruah, a scientist and in-charge of the Vigyan Prasara Amateur Radio Club Station in Delhi. "It is a hobby that fosters scientific temperament and empowers you. Disaster communication has been a major contribution of hams."

Gopal Madhavan, president, the Amateur Radio Society of India (ARSI), the oldest non-profit organisation that works to promote ham radio, says that while the

## Ham session: Socialising via airwaves

**RADIO GAGA** Hailed as the first true social networking medium, ham radio continues to thrive even in this age of Twitter, Skype, Facebook and smartphones

**CITY CORRESPONDENT**

**By Gurugram**

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Rahul Kaper, 65, shows his ham radio setup at his residence in Sector 16 in the Delhi. Kaper was only 10 when he got his first ham radio.

### Inside the hamdom

**HAM RADIO**

**HOW TO BE A HAM**

**HISTORY OF HAM RADIO IN INDIA**

**DELHI'S ACTIVE HAM CLUBS**

**ALPHA, BRAVO AND GOLF: DECODING THE HAM JARGON**

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## Hindustan Times coverage

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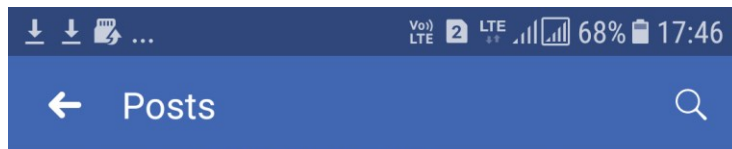
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**#amateurradio**



Make profile picture



👍❤️😲 You, Saborni Nag Biswas and 107 others



**Guest of Honour at East India (Bihar, Jharkhand, Odisha, West Bengal & Assam) Amateur Radio Conference**

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## Ham radio training in Sikkim

**SE Report**

**GANGTOK, March 9:** A six-day certification training-cum-workshop on Ham Radio started today at Sikkim Science Centre, Marchak. The training programme is being organized by Sikkim State Council of Science & Technology with support from Vigyan Prasar, Department of Science & Technology, Government of India.

The Quick Response Team under State Disaster Management department, teachers, media persons, NGOs and volunteers are undergoing the training programme which will cover in-depth Ham Radio studies, informs a press release.

During the workshop, the participants will also get to know the advance applications of Ham Radio such as packet radio and data transfer using PSK31.

The training programme will be followed by an examination to become certified HAM user which will be conducted by Union Ministry of Communication.

The inaugural session was

attended by Science & Technology principal secretary Anil Mainra as the chief guest.

While welcoming the resource persons and participants, Mainra explained the importance of alternative mode of communication during natural disaster and how it can save several lives if there are trained persons in remote areas to communicate with the help of such device.

He suggested all participants to be serious and take interest during the training so that the State's effort does not go waste.

Scientist Sandeep Baruah from Vigyan Prasar and former State Information Technology secretary Rajesh Verma are the resource persons.

During many of the past large scale disasters all over the world, Amateur Radio Service (Ham Radio) has proved its efficacy in quick dissemination of disaster management information like search and rescue, relief work, tracking of missing person, real-time plotting of vehicles and personnel involved in disaster management and transmission of weather telemetry data.

## Gangtok resident s Mansarovar Yatra

**Staff Reporter**

**GANGTOK, May 9:** An assistant engineer working with the State Rural Development department has been selected to undertake the Kailash Mansarovar Yatra through Nathu La route this year.

Toyanath Sharma (47) from Gangtok would visit Kailash Mansarovar through Nathu La in the fifth batch of the annual pilgrimage. His name was selected after the computerised draw of lots conducted by the Union External Affairs (MEA) ministry in New Delhi on May 6.

Sharma said he is happy but not excited. "I am happy that my name has been listed out in the draw but I am not excited as I have to go through medical test," he told SIKKIM EXPRESS.

A total of 2,482 complete applications, comprising 1948 males and 656 females, were registered for the draw this year. Among them, names of 1,430 applicants have been selected to undertake the yatra starting from June 12.

State Tourism department officials said they are however



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### NEWS

SIKKIM EXPRESS, 1

## Ham radio training for Sikkim concludes

SAMIRNUGO

GANGTOK, May 14: The weeklong State-level training on ham radio held at science centre at Marchak near Kanipool came to a close today.

The training programme was organized by Sikkim State Council of Science and Technology and supported by Vigyan Prasar, department of Science and Technology, government of India.

The training which started from May 9 had participants from across the districts comprising of Quick Response Team, members of SSDMA, media persons and NGOs members.

Sandeep Baruah, Scientist-E and the main resource person of the training, imparted technical knowledge on ham radio with the skill of theory and practical.

The valedictory function today had the State Science &



Participants using ham radio sets during the training. SE Pic

Technology principal secretary Anil Mainra as the chief guest accompanied by former secretary Rajesh Verma as a guest of honour.

Mainra urged the participants to make ham radio a hobby as it is useful during the time of emergency. He further appealed all the participants to clear its first

Land Revenue joint secretary Ganesh Khantal urged the trainees to be more dedicated and keep the skill in track. He further stated that the department in consultation with the Science & Technology department will soon start the amateur radio (ham radio) in Sikkim for emergency situations like natural disasters.

The trainees will have to appear and qualify a written exam which would make them eligible for a ham license to be issued by the Union Communication & IT ministry.

Amateur radio (ham radio) is a popular hobby and service that brings people, electronics and communication together. People use ham radio to talk across town, around the world, or even into space, all without the internet or cell phones. Ham radio plays a key role in the time of emergency like floods, earthquake, landslides etc when telecommunication network fails to work.



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## Workshop on Ham Radio Digital Communications at SPAES School, Nalgonda



A Workshop on Ham Radio Digital Communications was conducted at SPAES School, Huzur Nagar, Nalgonda jointly by Vignan Prasad and NIAR on 27 Apr 2013. About 100 students and staff were introduced to various types of Amateur Radio Digital Communications. The [redacted] is planning to start an Amateur Radio Club shortly. Mr.Sandeep Baruah, VU2MUE from Vignan Prasad and Mr.Jose Jacob, VU2JOS,



Pilot HS1HBJ used his airplane to survey damage in Thailand. (Photo courtesy of Phat, HS1WFK)

Nicobar Island the next morning on a military aircraft and established communication between Port Blair and Nicobar. Hundreds of messages were passed each day between the mainland and the affected areas. One report said the number of messages reached 30,000. The only link for thousands of Indians and other country people who were worried about their friends and families on the islands was ham radio.

"Our station in the control room became the center of messages between Port Blair and Nicobar Island," said Prasad. "Survivors in Car Nicobar were

hams of the country located on the mainland have helped us in relaying the messages whenever there was skip between our stations in the islands. When telephone lines were restored on Tuesday, the 28th of December, the information received on the radio about the survivors from Car Nicobar, that they were alive, was conveyed to their anxious relatives on the mainland. We also helped about 15 foreign tourists, including several from the U.S., to send news to their families."

VU2JOS, along with other government officials, was sent to Highbay Island for relief activity. "The common man was totally happy in utilizing our service, and the magnitude of their satisfaction on receiving the information about the welfare of their kith and kin was beyond one's imagination," said Prasad. Tremors continued for the next six days.

As the strong aftershocks continued throughout the night, the station remained on the air passing traffic to the Indian mainland. While some telephone service was restored the next day, the DXpedition operators reported the local authorities were "quite hungry for information on casualties in the region, since they have only a trickle of news from the outside. It seems that amateur radio is showing its value during a severe crisis."

ciated by the "Chief Secretary" of the Andamans.

### Technology Combined

During recent disasters we have seen the growing use of the internet combined with amateur radio. This disaster was no different. Sandeep, VU2MUE, said the "different technologies complemented each other."

A very long relief message for New Delhi was transmitted by Mohan, VU4/VU2MYH, in Car Nicobar on 30 December. VU2MUE could not copy the message because of poor propagation. The message was copied by Horey, VU2HFR, in Calcutta for relay to New Delhi. Instead of relaying the message on the air, VU2HFR in Calcutta typed it on his laptop computer and e-mailed it to Sandeep, VU2MUE, for further relay to the Director of Emergency Medical Relief Control Room in New Delhi. Confirmation that the message had been delivered was relayed back to the disaster area via amateur radio. Dr. Ravindran, Director of Emergency Medical Relief, thanked the ham radio volunteers for their support in handling government relief messages.

Many of the relief messages handled dealt with the daily number of deaths, missing, and injuries that each of us heard on the news. The Andamans



# HAM operator helps families connect with Tsunami victims

**RAMESH  
RAMACHANDRAN**  
TRIBUNE NEWS SERVICE

**NEW DELHI, DECEMBER 28**

An amateur radio enthusiast based in the Capital has succeeded where most government agencies have failed. Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair, the capital of Andaman and Nicobar Islands, and has helped relay messages between the people stranded on the island and their families back home.

Sitting at his terminal Tuesday afternoon, Baruah told The Tribune that he has received 10 "calls" over the past 48 hours. "I have received e-mails and SMSes from several places at home and abroad ... Bangalore, Ranchi, Pune and Thailand ... I have relayed all their messages to this team of HAM operators stationed at Port Blair and forwarded the replies from them to the families wherever they are," he said. One such distraught family is from New Delhi.

Dr Karan Singh Chauhan, who teaches in a college here, was holidaying with his two sons and a daughter on the island when the Tsunami hit the shore. It had only been a few days from the time they reached Port Blair. "Fortunately," Dr Chauhan recalled, "There were these people staying on the fifth floor of the hotel where we were put up ... they had this equipment (HAM), so we asked them if they could relay the infor-

mation of our well-being to people back home."

Within hours, Sandeep Baruah was on the telephone informing Dr Chauhan's domestic help of their whereabouts. Dr Chauhan and his family, who returned to the Capital last night, have not spoken with Baruah yet but he is all praise for him and the amateur radio operators on the island for coming to his help in their hour of need. Baruah, meanwhile, has no regrets. He has no time for that for there are other calls to be attended to, he says as a distant station crackles at his terminal.

Like Dr Chauhan, Mrs Cesar Maia from Bangkok, Thailand, has established contact with Baruah. She wants to if her husband is safe and sound on the island. "I have not received any news about her husband but I am trying ... the audio quality today is poor, so I might have to wait longer to hear from my counterparts stationed on the island," says Baruah, who is happy being Good Samaritan for people he has come to know only in the past few days.

Meanwhile, Dr Chauhan is still to recover from his harrowing experience on the island. "Buildings were literally swaying from side to side, the hotel where we were staying was damaged ... there were cracks in the walls, the sea was violent and washed away anything and everything that came in its way ... even the boundary wall of a college nearby was swept away ... all of us spent the first night outside," he recalls before he, his children and one other family flew to Kolkata on way to Delhi.



Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair.

## Delhiites chip in with relief

TRIBUNE NEWS SERVICE

**NEW DELHI, DECEMBER 28**

The leader of Opposition in Delhi Legislative Assembly, Prof. Jagdish Mukhi, has expressed grief over the widespread death and destruction caused by the Tsunami in southern India and many countries in the Indian Ocean.

A meeting of the BJP legislature party was called in this regard and it observed a two-minute silence as a mark of respect to the deceased. The BJP legislators have also

decided to donate their one-month salary for the victims.

Meanwhile, the NDMC Vice Chairperson, Tajdar Babar, has moved a resolution for contributing Rs. one crore as financial assistance from the municipal funds. This is in addition to the token contribution from NDMC employees for the quake victims of Tamil Nadu.

The Municipal Corporation of Delhi has also decided to pay Rs. 4 crore to the Prime Minister's Relief fund. This fund is being raised by way of

contributions from MCD councilors who are contributing their one month's stipend and employees who are contributing one day's salary. The contribution of the latter adds up to Rs 3 crore.

According to the mayor, the MCD has set up collection centres in all 12 zones under the supervision of Deputy Commissioner to collect relief materials. The material collected would be handed over to the Ministry of Home Affairs for transportation to the affected areas.

ADMISSION GUIDANCE

# The Tribune

VOICE OF THE PEOPLE

Chandigarh . New Delhi . Jalandhar . Bathinda . Srinagar. Saturday, October 27, 2012

www.tribuneindia.com

## Workshop on Ham radio begins

TRIBUNE NEWS SERVICE

DEHRADUN, OCTOBER 26

A two-day training workshop on Ham radio started at Doon University today. The workshop is a joint initiative of the Uttarakhand State Council for Science and Technology (UCOST), the Uttarakhand Disaster Mitigation and Management Centre and Doon University.

Inaugurating the workshop, Director, UCOST, Dr Rajendra Dobhal emphasised on the importance of Ham radio to maintain communication in cases of natural disasters.

He stressed on adequate training for Ham radio licence holders in all 13 districts of Uttarakhand. He also asked the HAM radio licence holders in the state to set up an effective network under the aegis of UCOST.

Doon University's Vice-Chancellor Prof VK Jain spoke on the importance of HAM radio, particularly in the aftermath of disasters. He said Doon University was conducting both postgraduate and undergraduate courses on disaster management.



## राज्य में बनेगा हैम रेडियो का मजबूत नेटवर्क



हैम रेडियो की प्रशिक्षण कार्यशाला को संबोधित करते हुए डा. राजेन्द्र डोभाल। फोटो: एसएनबी

देहरादून (एसएनबी)। भौगोलिक परिस्थिति वाले राज्य उत्तराखण्ड में आपदा प्रबंधन के लिए हैम रेडियो संचार प्रणाली का महत्वपूर्ण स्थान रखित हो सकता है। राज्य विज्ञान एवं प्रौद्योगिकी परिषद (यूकेस्ट) राज्य में हैम रेडियो नेटवर्क को मजबूत करेगा। परिषद के माननिरेटर डा. राजेन्द्र डोभाल ने इसकी घोषणा की।

उन्होंने कहा कि राज्य के अनुभवी व स्वतंत्र चरक हैम रेडियो संघर्षकों का नेटवर्क तैयार कर आपदा प्रबंधन के लिए संचार मजबूत माध्यम बनाया जाएगा। हैम रेडियो संघर्षकों से सूचना प्रौद्योगिकी की

विस्तृत जानकारी हमिल करने का आग्रह भी उन्होंने किया। शुक्रवार को दून विश्वविद्यालय में आयोजित दो दिवसीय राज्य स्तरीय हैम रेडियो प्रशिक्षण कार्यशाला का उद्घाटन करते हुए डा. डोभाल ने उक्त बात कही। आपदा प्रबंधन एवं न्यूक्लियर केंद्र व दून विवि के सहयोग से कार्यशाला का आयोजन यूकेस्ट व विज्ञान प्रसार के संयुक्त

तकनीक में किया जा रहा है। कौन मुल्य अतिथि प्रशिक्षण कार्यशाला का शुभारंभ करते हुए माननिरेटर डा. डोभाल ने कहा कि अन्य राज्यों की अपेक्षा प्रदेश की

भौगोलिक परिस्थिति विषय है। हर अंतराल बाद भूकंप, भूस्खलन, बाढ़ल फटना आदि प्राकृतिक आपदाएं राज्य में आती हैं। इस तरह की प्राकृतिक आपदाओं में प्रभावित क्षेत्र में त्वरित आपदा प्रबंधन कार्य शुरू करने की चुनौती रहती है। यह तभी संभव है जबकि संचार का स्थापन मजबूत हो। इस दिशा में हैम रेडियो संचार प्रणाली का महत्वपूर्ण स्थान रखित हो सकता है। उन्होंने कहा कि प्रदेश के सभी जनपदों के एमएसएमसी हैम रेडियो संघर्षकों को समन्वयन के तहत कार्य करना चाहिए। यूकेस्ट हैम रेडियो संघर्षकों को हर संभव मदद उपलब्ध कराना है।

दून विवि के कुलपति प्रोफेसर वंकि जैन ने हैम रेडियो की उपयोगिता व महत्व पर प्रकाश डाला। उन्होंने कहा कि सम्पत्ति सुरक्षा की दृष्टि से हैम रेडियो संवेदनशील संसार उपकरण बनती है बाकजु विपरीत भौगोलिक परिस्थिति में गुप्तताओं के अद्यतन-प्रदान के लिए इसकी उपयोगिता को नकारा नहीं जा सकता है।

विश्वविद्यालय में आपदा प्रबंधन से संबंधित पाठ्यक्रमों में इस तरह के कार्यक्रमों को शामिल किया गया है। विज्ञान प्रसार, विज्ञान एवं प्रौद्योगिकी विभाग के हैम रेडियो विशेषज्ञ इंजीनियर संदीप बरुआ ने कहा कि इंटरनेट व संचार प्रौद्योगिकी में प्रचुर अन्य तकनीकी व संसाधनों की अपेक्षा हैम रेडियो संचार अद्यतन-प्रदान का सतत माध्यम है। हर विपरीत परिस्थिति में सूचना संचरण में इसका प्रयोग किया जा सकता है। अपराधन बाद अकेलित तकनीकी सत्र में स्वतंत्र संघर्षकों हैम रेडियो संघर्षकों को नेटवर्किंग के तौर-परीकों व सूचना प्रौद्योगिकी के क्षेत्र में प्रचुर नवीनतम तकनीकी की जानकारी दी गई। कार्यक्रम का संयोजन यूकेस्ट के जिला समन्वयक डा. प्रकाश सिंह ने किया। 13 जनपदों के स्वतंत्र संघर्षकों हैम रेडियो संघर्षकों व निता रामनयक प्रशिक्षण कार्यशाला में भाग ले रहे हैं। डा. वरिता खन्नुबा, डा. भवतोष लर्मा, डा. खेरी उमिया, डा. राजेश कुमार, डा. नृपमोहन लर्मा आदि भी इस अवसर पर उपस्थित रहे।

### Recognition by NCERT/CBSE

Considering the importance of Amateur Radio as an important alternative mode of communication, CBSE (after the Tsunami disaster) incorporated amateur radio (ham radio) into its Class X Social Study Syllabus on Disaster Management. **The NCERT book under the above syllabus specifically highlighted contribution of Vigyan Prasara in their Class X book on Disaster Management. A copy of the NCERT book is available at:** <https://www.cbse.gov.in/DM%20ENGLISH.pdf>

### Vigyan is providing support to NIDM & NDMA

NIDM is using course material prepared by Vigyan Prasara for amateur radio training programmes which is available at:

[https://nidm.gov.in/PDF/trgreports/2018/September/24-28\\_nidm.pdf](https://nidm.gov.in/PDF/trgreports/2018/September/24-28_nidm.pdf)

**Some of the State-Wise outreaching activities conducted by him are:**

Name of State	No. of outreaching/workshop/training activities conducted
Uttarakhand	<p align="center"><b>7</b></p> <p>National Media Coverage of Vigyan Prasar's Ham Radio Activity:</p> <ul style="list-style-type: none"> <li>(i) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/03HamRadioWorkshop_at_Jangal_Mangal_near_to_Dehradun.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/03HamRadioWorkshop_at_Jangal_Mangal_near_to_Dehradun.jpg</a> [ <b>State Level Training Programme News</b> ]</li> <li>(ii) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/05EMRI_UCOST_Vigyan_Prasar_ham_radio_workshop_AMAR_UJALA_News.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/05EMRI_UCOST_Vigyan_Prasar_ham_radio_workshop_AMAR_UJALA_News.jpg</a></li> <li>(iii) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/02Ham_Radio_Workshop_Doon_University_HindustanTimes_News.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/02Ham_Radio_Workshop_Doon_University_HindustanTimes_News.jpg</a> [ <b>State Level Training Programme News</b> ]</li> <li>(iv) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/04UCOSTVPDehradunham_Amar_Ujala.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/04UCOSTVPDehradunham_Amar_Ujala.jpg</a></li> <li>(v) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Dainik_Jagaran_Vigyan_Prasar_HamRadio_Workshop_News.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Dainik_Jagaran_Vigyan_Prasar_HamRadio_Workshop_News.jpg</a></li> <li>(vi) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/EMRI_UCOST_VP_HT_news.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/EMRI_UCOST_VP_HT_news.jpg</a></li> <li>(vii) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/DST_NewDelhi_HamRadio_Workshop_Doon_University_THE_PIONEER_News.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/DST_NewDelhi_HamRadio_Workshop_Doon_University_THE_PIONEER_News.jpg</a></li> <li>(viii) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/EMRI_Vigyan_Prasar_ham_radio_workshop_SHAH_TIMES_news.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/EMRI_Vigyan_Prasar_ham_radio_workshop_SHAH_TIMES_news.jpg</a></li> <li>(ix) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Ham_Radio_In_VigyanPrasar_In_Doon_University.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Ham_Radio_In_VigyanPrasar_In_Doon_University.jpg</a></li> <li>(x) <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Uttarakhand_ham_radio_training_news_Dream2047VigyanPrasar_Newsletter.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Uttarakhand_ham_radio_training_news_Dream2047VigyanPrasar_Newsletter.jpg</a> [ <b>State Level Training Programme News</b> ]</li> <li>(xi) <b>Shri attended as a Guest Speaker</b> at Indian Institute of Technology Roorkee on the occasion of <b>Cognizance 2009- annual technical festival of IIT Roorkee organized by students of electronics and computer department. A portion of his programme on Morse Code: Digital mode for interplanetary communication? Is at YOUTUBE:</b> <a href="https://youtu.be/zXT08p80Sj0">https://youtu.be/zXT08p80Sj0</a></li> <li>(xii) At Bhimtal, Uttarakhand on February 18 &amp; 19, 2005 Ham Radio Workshop during Workshop on Science &amp; Technology for Development of Uttaranchal jointly with Jan Sikshan Santhan, Bhimtal <a href="http://www.qsl.net/vu2msy/bhimtal/index.html">http://www.qsl.net/vu2msy/bhimtal/index.html</a></li> <li>(xiii) Training Session on Ham Radio Digital Communication technologies was conducted by Shri Baruah, as a <b>Guest Lecturer at Lalbahadur Shastri National Academy of Administration (LBSNAA), Centre for Disaster Management (CDM), Mussoorie for the IAS</b></li> </ul>



	<p><b>probationary officers.</b> Shri Baruah received a letter of appreciation from Shri Rajesh Arya, IPS, Deputy Director (Sr.), CDM. Ref: <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/LBSNAA_CDM_Appreciation_Letter_fromSHri_Rajesh_Arya_IPS_to_Sandeep_Baruah.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/LBSNAA_CDM_Appreciation_Letter_fromSHri_Rajesh_Arya_IPS_to_Sandeep_Baruah.jpg</a></p>
Himachal Pradesh	<p><b>4</b></p> <ol style="list-style-type: none"> <li>1. Bilaspur</li> <li>2. Shimla</li> <li>3. NIT Hamirpur [ <a href="https://hamnith.wordpress.com/workshop-on-practical-implementation-of-ham-radio/">https://hamnith.wordpress.com/workshop-on-practical-implementation-of-ham-radio/</a> ] In continuation to the ham radio workshop conducted at NIT Hamirpur, Himachal Pradesh last year to prepare the students to appear for the amateur radio licencing examination at International Monitoring Station, Ghitorni, New Delhi, a hands-on workshop was again conducted on 7th and 8th April, 2017 at NIT Hamirpur. Students were practically demonstrated ham radio antenna installation procedures [ Social Media reference of the "Video Documentation" available at public link: <a href="https://www.facebook.com/hashtag/vu2muenithamirpur?source=embed">https://www.facebook.com/hashtag/vu2muenithamirpur?source=embed</a> ]. During this workshop Shri Sandeep Baruah, Scientist-E, Vigyan Prasar was also accompanied and assisted by Shri Atanu Dasgupta, VU2ATN - Retired General Manager (Telecom, Powergrid) who as an accomplished ham with vast technical experience. Students assembled a very low power 7 MHz ham radio transceiver during the workshop. A "Ham Radio Society" was formed by the NIT Hamirpur students under our guidance. Web Ref: <a href="https://hamnith.wordpress.com/">https://hamnith.wordpress.com/</a></li> </ol>
Sikkim	<p><b>1</b></p> <p><b>State Level Training Programme</b></p> <p>From May 8 to 16, 2016 A State Level Ham Radio Training Programme was conducted by Vigyan Prasar for the tribal resource persons at Gangtok, Sikkim for 50 participants from 4 districts of Sikkim conducted at Sikkim State S&amp;T Council [Sikkim Science Centre]. The participants are now awaiting ham radio licence from the Ministry of Communications as passed the Amateur Stationh Operator's Certificate Exam conducted by Wireless Monitoring Station, Siliguri on May 25, 2017 and the results were declared on 24<sup>th</sup> July.</p> <p>Media Coverage:</p> <p>[a]  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Sikkim_Express_State_Level_Ham_Radio_Training_New_10th_May_2016.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Sikkim_Express_State_Level_Ham_Radio_Training_New_10th_May_2016.jpg</a>  [ <a href="https://tinyurl.com/y7696dnf">https://tinyurl.com/y7696dnf</a> ]</p> <p>[b]  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SikkimExpress_Ham_Radio_Training_News15May2016.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SikkimExpress_Ham_Radio_Training_News15May2016.jpg</a>  [ <a href="https://tinyurl.com/hts4pyv">https://tinyurl.com/hts4pyv</a> ]</p> <p>[c]  <a href="http://www.qsl.net/vu2msy/documentation/03HamRadioNewsSikkimTraining2016forFB.jpg">http://www.qsl.net/vu2msy/documentation/03HamRadioNewsSikkimTraining2016forFB.jpg</a></p>

	[ <a href="https://tinyurl.com/he5xbz6">https://tinyurl.com/he5xbz6</a> ]
Maharashtra	<p><b>1</b></p> <p>Vigyan Prasar's ham radio expertise is sought by technical institutes in establishing satellite ground stations for receiving and tracking of the Low Earth Orbit [LEO] ham satellites. Necessary guidance was provided to Satellite Ground-Station Team, <b>Atharva College Of Engineering, University of Mumbai</b>. They have now successfully installed the system which was acknowledged by AMSAT-North America. Atharva Satellite Ground-Station was inaugurated at The Atharva College of Engineering, University of Mumbai in India on March 15, 2012 where Shri Sandeep Baruah, Scientist-E from Vigyan Prasar was Guest Speaker. He conducted lecture and demonstration attended by the student team at Atharva College of Engineering along with the Indian Institute of Technology, Bombay for the communication, telemetry and data acquisition of their Pratham student satellite project. During the formal inauguration on March 15, 2012 Students at Atharva Satellite Ground-Station successfully communicated to Delhi using the Indian ham satellite VO-52 covering a distance of 850 Miles from Mumbai. Shri Baruah was acknowledged by the students for continuously guiding them in Linkdin/email messages as well as their website:  <a href="http://www.atharvacoe.ac.in/ground-station/">http://www.atharvacoe.ac.in/ground-station/</a>  [ <a href="https://tinyurl.com/yd4vs76m">https://tinyurl.com/yd4vs76m</a> ]</p> <p><b>To guide the students to receive Morse Code Telemetry Beacon from COEP built (College of Engineering Pune) ham radio satellite SWAYAM</b>, a demonstration video is uploaded by Shri Baruah, while he was receiving the signal from the roof of his residence in the night. He is guiding the students in different technical aspects. The video is at:  <a href="http://www.qsl.net/vu2msy/satellite/SWAYAM28June2016/SWAYAM_CW_28June2016Pass/SWAYAM_CW_28June2016Pass_player.html">http://www.qsl.net/vu2msy/satellite/SWAYAM28June2016/SWAYAM_CW_28June2016Pass/SWAYAM_CW_28June2016Pass_player.html</a></p>
Rajasthan	<p><b>5</b></p> <ol style="list-style-type: none"> <li>1. BITS Pilani [ A Youtube documentation of a portion of the workshop can be viewed at: <a href="https://youtu.be/zXT08p80Sj0">https://youtu.be/zXT08p80Sj0</a> ]</li> <li>2. Poornima College of Engineering, Jaipur</li> <li>3. Demonstration of Ham Radio Digital Communication at the National Festival of the Ham Radio Operators: <b>On 6th of November, 2016 a Technical Session was conducted by Shri Sandeep Baruah, Scientist-E at the 25th National Conference of the ham radio operators held at Mount Abu, Rajasthan</b> which was live streamed on Internet in YOUTUBE channel at the following link:  <a href="https://youtu.be/7VacLQeFNRM">https://youtu.be/7VacLQeFNRM</a></li> </ol> <p>Shri Baruah received a hearty felicitation from the organizers for his 25 years of voluntary committed and dedicated service promoting ham radio in India. He was felicitated by the Chairman of the Conference Dr. D. R. Kaarthikeyan, IPS. 400 hams from India and abroad attended the programme.</p>



	4. Manipal University Jaipur 5. University of Engineering & Management (UEM), Jaipur 6. Malaviya National Institute of Technology Jaipur
Haryana	<p><b>15</b></p> <ol style="list-style-type: none"> <li>1. He is a Guest Faculty of <b>Haryana Institute of Public Administration (HIPA)</b>. During all the programmes related to Disaster Mitigation, Shri Baruah is training the Civil Defence Officials and other governmental employees. His name is included as an communication expert in the Directory of Resource Persons in Disaster Management brought out by HIPA [ <a href="http://nidm.gov.in/PDF/Pubs/DM_Dir_2014.pdf">http://nidm.gov.in/PDF/Pubs/DM_Dir_2014.pdf</a> ]  A video documentation at: <a href="https://youtu.be/gT9nA65qGCk">https://youtu.be/gT9nA65qGCk</a> He conducted 12 training programmes at HIPA.</li> <li>2. Shri Baruah, attended as a Resource Person at <b>Hisar Haryana Agriculture University</b> National Workshop of NCC Cadets. Related National Media News of I Haryana R&amp;V NCC Sqn, Hisar participating in the workshop was published in Dainik Bhaskar : <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/06Hisar_Agricultural_University_NCC_Cadets_National_Workshop.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/06Hisar_Agricultural_University_NCC_Cadets_National_Workshop.jpg</a></li> <li>3. Blue Bell Public School, Gurgaon</li> <li>4. Colonel's National Academy Public School, Gurgaon</li> </ol>
Chandigarh/ Punjab	<p><b>4</b></p> <ol style="list-style-type: none"> <li>1. Ham Radio Workshop at State S&amp;T Council Punjab</li> <li>2. A Technology Demonstration Programme was organized at Snow &amp; Avalanche Study Estt. (Research and Development Center), Ministry of Defence, DRDO, Chandigarh on September 16, 2010 where the integration of Automatic Weather Station to ham radio transceivers for real time telemetry transmission of weather parameters via a simulated network of high altitude ham radio digital repeaters (Digipeaters) was demonstrated and a technical session was conducted. Ref: <a href="http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SandeepBaruahVU2MUE_at_Snow_and_Avalanche_Study_Establishment_DRDO_Chandigarh.jpg">http://www.qsl.net/vu2msy//documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SandeepBaruahVU2MUE_at_Snow_and_Avalanche_Study_Establishment_DRDO_Chandigarh.jpg</a></li> <li>3. Guru Nanak Dev Engineering College, Ludhiana</li> <li>4. Guru Nanak Dev Polytechnic College, Ludhiana</li> </ol>
National Capital Territory of Delhi (NCT)	<p><b>100</b></p> <p><b>More than 100 outreaching programmes were conducted in NCT [New Delhi, Ghaziabad, Noida ]. Some of these are already listed in our previous reply.</b></p> <ol style="list-style-type: none"> <li>1. Outreaching activities are regularly conducted in the schools at different location in Delhi</li> <li>2. Some of the Programmes conducted in NCT are documented at YOUTUBE: <ol style="list-style-type: none"> <li>(i) <a href="https://youtu.be/AL3yAeTa2rM">https://youtu.be/AL3yAeTa2rM</a></li> <li>(ii) <a href="https://youtu.be/pybf0jhCEwI">https://youtu.be/pybf0jhCEwI</a></li> </ol> </li> </ol>

- (iii) <https://youtu.be/b5nteQPvymo>
- (iv) <https://youtu.be/N75rU7u7vxY>
- (v) <https://youtu.be/oJU0aUcDZPU>
- (vi) <https://youtu.be/Zs0kIGbXUvU>
- (vii) <https://youtu.be/JoURLjAR-RY>
- (viii) <https://youtu.be/BKEPXIIfbUk>
- (ix) <https://youtu.be/2zLqKCAey5o>
- (x) <https://youtu.be/zeQkDT3ca1I>
- (xi) <https://youtu.be/p5nWLDwrL7s>
- (xii) <https://youtu.be/sp4HciC0JuI>

International Disaster Management Exhibition 2008 Ham Radio Demonstration

3. Amateur Radio training programmes are regularly conducted by Shri Sandeep Baruah at **NIDM (National Institute of Disaster Management)**
4. NDTV interviewed Shri Sandeep Baruah, Scientist-E, Vigyan Prasar on 22 July 2014 giving extensive coverage of his conversation referring to Vigyan Prasar's role in promoting ham radio.  
<http://gadgets.ndtv.com/telecom/features/the-first-social-network-chewing-the-rag-with-indias-ham-radio-operators-562745>  
[ <https://tinyurl.com/gwmxqqd> ]
5. NDTV again interviewed Shri Baruah during the Uttarakhand Disaster Communication related to role of ham radio in disaster management; the News is in Youtube: <https://youtu.be/1ObdwqohRnk> Screenshot grab of the news:
  - (1) [http://www.qsl.net/vu2msy/documentation/Ham\\_Radio\\_in\\_Vigyan\\_Prasar\\_In\\_National\\_Media/HamRadio\\_NDTV\\_News\\_VigyanPrasar\\_Reference.jpg](http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/HamRadio_NDTV_News_VigyanPrasar_Reference.jpg)
  - (2) [http://www.qsl.net/vu2msy/documentation/Ham\\_Radio\\_in\\_Vigyan\\_Prasar\\_In\\_National\\_Media/HamRadioPromotionalActivitiy\\_of\\_Vigyan\\_Prasar\\_Featured\\_on\\_NDTV.jpg](http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/HamRadioPromotionalActivitiy_of_Vigyan_Prasar_Featured_on_NDTV.jpg)
6. The ***Times of India Bangalore*** [ Bangalore Times ] also interviewed Shri Baruah and quoted him related to role of ham radio in disaster management:  
[http://www.qsl.net/vu2msy/documentation/Ham\\_Radio\\_in\\_Vigyan\\_Prasar\\_In\\_National\\_Media/Bangalore\\_Times\\_April\\_27\\_2015\\_News\\_on\\_Ham\\_radio\\_in\\_Emergency\\_Communication.jpg](http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Bangalore_Times_April_27_2015_News_on_Ham_radio_in_Emergency_Communication.jpg)
7. In another article that came out in Seven Sisters Post Shri Baruah was quoted for his role in promoting ham radio in India:  
[http://www.qsl.net/vu2msy/documentation/Ham\\_Radio\\_in\\_Vigyan\\_Prasar\\_In\\_National\\_Media/01Seven\\_Sisters\\_Post\\_February\\_03\\_2012\\_Article\\_by\\_Reema\\_Gowalla.jpg](http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/01Seven_Sisters_Post_February_03_2012_Article_by_Reema_Gowalla.jpg)
8. Emergency communication Mock drill exercises were coordinated by Vigyan Prasar at the behest of NDMA [previously NDM Division] . An emergency communication mock drill exercise conducted by Vigyan Prasar at the behest of Ministry of Home Affairs was able to draw international attention. The activity was highlighted/featured in America's most popular **Amateur Radio Magazine "CQ" in its October 2004 issue citing our role and its importance specifically mentioning Shri Baruah's coordination.** The PDF copy of the article can be accessed at



<http://www.qsl.net/vu2msy/documentation/CQAmericaCitingHamRadioInVigyanPrasar.pdf>  
[ <https://tinyurl.com/ya6tgwvj> ]

9. Shri Baruah attended as the 'National Expert' at the IEEE International Seminar on Ham Radio titled "INTERNATIONAL WORKSHOP ON AMATEUR RADIO COMMUNICATION & COMPUTING IN EDUCATIONAL ENVIRONMENT" 14th & 15th SEPTEMBER 2016 at ABES Engineering College in Ghaziabad ; the IEEE communication newsletter cited him acknowledging his skill; The "International Expert" commented in this newsletter: QUOTE "The lecture attracted many female students. As I noticed, Indian schooling is not worried about any decrease of interest for technical education for young women. The workshop was combined with a practical session performed by a skilled radio amateur, Sandeep Baruah, VU2MUE, scientist-E with Vigyan Prasar, an autonomous body under the Department of Science & Technology, Government of India." UNQUOTed from <http://gcncs.org/amateur-radio-lectures-poland-and-india> [ <https://tinyurl.com/ych53tzt> ]  
ABES Engineering College News citing me and Vigyan Prasar:  
[http://gn.dronacharya.info/Amateur\\_Radio\\_jan\\_2016.asp#ad-image-0](http://gn.dronacharya.info/Amateur_Radio_jan_2016.asp#ad-image-0)  
[ <https://tinyurl.com/ydg2kmoe> ]
10. THE TRIBUNE 2004 Tsunami Disaster Relief Ham Radio Operation News. They specifically cited the contribution of Sandeep Baruah during the Tsunami Emergency Communication  
<http://www.tribuneindia.com/2004/20041229/delhi.htm>  
[ <https://tinyurl.com/ya9wwewe> ]  
The scanned printed version of the news is at:  
[http://www.qsl.net/vu2msy/documentation/Tsunami\\_operation\\_news.gif](http://www.qsl.net/vu2msy/documentation/Tsunami_operation_news.gif) [ <https://tinyurl.com/yb7o5wam> ] This was highlighted and  
The CBSE Class X text book can be downloaded from:  
<https://www.cbse.gov.in/DM%20ENGLISH.pdf> [ **Page No 36** ]  
where Shri Baruah's contribution is specifically mentioned.
11. NSIT New Delhi Ham Radio Workshop  
<http://www.qsl.net/vu2msy/HamRadioDigitalFusionTechnologyDemonstrationatNetajiSubhasInstituteofTechnology.html>  
[ <https://tinyurl.com/j4edrnf> ]
12. On April 12, 2016, Shri Baruah, as a **Guest Speaker and expert in ham radio at Russian Embassy Cultural Centre on the occasion of Yuri Gagarin [who was a ham] Day**. Demonstration of Digital communication was given and there was a video show in which the following video was played to make the participant's aware about NASA's ham radio satellite ARISSat-1 programme which was named KEDAR [radio call-sign of Late Yuri Gagarin ] to commemorate the space flight of Yuri Gagarin. In this video it was demonstrated by him how amateur radio experimenters receive images transmitted from space. The video link:  
<https://youtu.be/HTbnHZWDHUI>  
The following news highlights my presentation:

[https://in.rbth.com/arts/culture/2016/04/14/rcsc-lauds-gagarins-pioneering-flight-and-achievements\\_584755](https://in.rbth.com/arts/culture/2016/04/14/rcsc-lauds-gagarins-pioneering-flight-and-achievements_584755)

QUOTE: "Among the speakers were N. Ratnasree, Director, Nehru Planetarium, Biman Basu, retired scientist, Council for Scientific and Industrial Research, and **Sandeep Baruah, Scientist "E", Vigyan Prasar, Department of Science & Technology**. A gathering comprising science enthusiasts, students and social activists, attended the function...**Describing the wider possibilities and vast potential of scanning the world utilising the service of amateur radio, Baruah pinpointed the access and exposure that a common man could achieve in scientific observation by establishing contact with cosmonauts and astronauts.**" UNQUOTE [

<https://tinyurl.com/ycmhmg2k> ]

13. On **10th July, 2017**, **Army officials of the 21 Signal Group** visited Vigyan Prasar's ham radio facility deputed by Major Abhishek Dwivedi for his officials to be acquainted with amateur radio communication system and the possibility of incorporating ham radio in the Armed forces as a second line of Communication.
14. A Ham Radio Kit Building Workshop and Ham Radio Demonstration Programme was organized at Apeejay School Saket on **10th August, 2017**. During the kit building workshop the following instructional material was given to the kids:  
<http://www.qsl.net/vu2msy/homebrew/FMToyTransmitterAssemblyInstructionsEduSAT2017.pdf>  
[ <https://tinyurl.com/yb6rqy35> ]
15. Shri Baruah, participated as an expert at the National Programme on "**Communications in Emergencies and Disaster Situations organized by National Institute of Disaster Management NIDM jointly with Directorate General of Doordarshan on January 18, 2017**". Shri Baruah practically demonstrated different ham radio technologies relevant to emergency communication for which a temporary ham radio cross-band repeater system was installed at NIDM as a relay station to demonstrate accessing of Delhi Ham Radio Repeater Station VU2DLR located at Vigyan Prasar and local VHF Line-of-Sight communication was established with another ham radio station at Gurgaon operated by retired General Manager of Powergrid Shri Atanu Dasgupta, VU2ATN, who addressed the participants as a part of the demo. **Ankur Puranik, VU2AXN, the Chief Commanding Officer (Engineering & Wireless) of Disaster Amateur Radio Emergency Services (DARES), Mumbai Civil Defence** at NIDM *live streamed* a portion of Shri Baruah's presentation/demonstration which can be viewed at:  
<http://tinyurl.com/hvydvqw>
16. A Session on Ham Radio was conducted by Shri Sandeep Baruah, at Haryana Institute of Public Administration as Guest Faculty on **9th May, 2017** where 50 Civil Defence Officials were introduced to ham radio and preliminary training provided.
17. An activity book on "Radio Communication" for hands-on kit building workshop was brought out by Vigyan Prasar authored by Shri Baruah,. During the EduSAT Summer Science Festival 2017. A radio transmitter kit building workshop was conducted at Vigyan Prasar from June 14 to June 21, 2017, where students were trained



	<p>hands-on to assemble a toy radio transmitter. Students were provided with the electronic component and other resources along with the guidebook on radio communication and the following instructional material:</p> <p><a href="http://www.qsl.net/vu2msy/homebrew/FMToyTransmitterAssemblyInstructionsEduSAT2017.pdf">http://www.qsl.net/vu2msy/homebrew/FMToyTransmitterAssemblyInstructionsEduSAT2017.pdf</a>  [ <a href="https://tinyurl.com/yb6rqy35">https://tinyurl.com/yb6rqy35</a> ]</p>
Uttar Pradesh	<p><b>8</b></p> <ol style="list-style-type: none"> <li>1. IIT Kanpur ( 3 workshops on ham radio was conducted by Shri Sandeep Baruah, Scientist-E, Vigyan Prasar at IIT Kanpur as Guest Lecturer )  A detailed report for one of the programmes at:  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/IIT_Kanpur_Techkriti_2010Annual_Technical_Festival.pdf">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/IIT_Kanpur_Techkriti_2010Annual_Technical_Festival.pdf</a>  <i>National Media Coverage</i> of the IIT Ham Radio workshop:  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/04HindustanTimes_IIT_Kanpur_Ham_Report.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/04HindustanTimes_IIT_Kanpur_Ham_Report.jpg</a></li> <li>2. Gwalior Glory Public School, Gwalior</li> <li>3. St. Merry Public School, Gwalior</li> <li>4. Lucknow (During the Vigyan Rail Mobile Science Exhibition in 2004)</li> <li>5. During the National Ham Radio Conference (popular as Hamfest India) 2013 held at Gwalior, Shri Sandeep Baruah, Scientist-E, Vigyan Prasar deliberated a demonstration and presentation on ham radio digital communication to an audience of nearly 150 participants from across the country and neighbouring countries like Nepal, Bangladesh etc.</li> <li>6. Vidya Mandir Inter-University College Meerut NASA-astronaut contact programme</li> <li>7. Hamfest-India 2013 as distinguished guest speaker</li> </ol>
Andhra Pradesh/Telangana	<p><b>2</b></p> <ol style="list-style-type: none"> <li>1. Hyderabad (A Ham Radio Workshop for Sree Devi Engineering College students was conducted by Shri Baruah, at National Institute of Amateur Radio – NIAR. PDF Newsletter reference:  <a href="http://www.niar.org/images/ham-news/pdf/2013MarApr.pdf">http://www.niar.org/images/ham-news/pdf/2013MarApr.pdf</a>  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Hyderabad_Programme_for_Sree_Devi_Engg_College.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/Hyderabad_Programme_for_Sree_Devi_Engg_College.jpg</a></li> <li>2. A workshop on Ham Radio Digital Communication was organized at Vignan Techno SPAES School, Huzur Nagar, Nalgonda (erstwhile Andhra Pradesh now Telangana) on 27<sup>th</sup> April, 2013. Related News link:  <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SPAES_School_Nalgonda_Andhra_Pradesh_Telangana.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/SPAES_School_Nalgonda_Andhra_Pradesh_Telangana.jpg</a></li> </ol>
Tamil Nadu	<p><b>1</b></p> <p>During <b>graVITas 2014 - An International Knowledge Carnival</b> at <b>Vellore Institute of Technology University, Vellore [VIT University,</b></p>

	<p><b>Vellor]</b> A ham radio technology programme was organized at VIT University, Vellor on 27th September, 2014 for the students of Electronics &amp; Communications Engineering Department of Vellore Institute of Technology University, Vellore on the occasion of their Technical Festival graVITas 2014. Vigyan Prasar official Shri Sandeep Baruah attended and organized the programme as a Guest Speaker invited under the "<b>Uncommon Indians</b>" category]. APRS -A US Naval Academy ham radio technology was demonstrated to the students. It was demonstrated how a map on a laptop can be changed by pressing a radio button remotely which cannot be done by a smartphone. Morse Code technology was also demonstrated as an alternative to digital modes of communication. Social Media reference: <a href="https://www.facebook.com/media/set/?set=a.10202898428116810.1073741880.1085772931&amp;type=1&amp;l=14204a88ef">https://www.facebook.com/media/set/?set=a.10202898428116810.1073741880.1085772931&amp;type=1&amp;l=14204a88ef</a></p> <p>[ <a href="https://tinyurl.com/y8ybk5oa">https://tinyurl.com/y8ybk5oa</a> ]</p> <p>VIT University Vellore News in United Kingdom ham radio portal: <a href="http://www.southgatearc.org/news/2014/september/ham_radio_at_gravitas_2014.htm#.Vby5WvlhQZw">http://www.southgatearc.org/news/2014/september/ham_radio_at_gravitas_2014.htm#.Vby5WvlhQZw</a> [ <a href="https://tinyurl.com/y7sf2w6l">https://tinyurl.com/y7sf2w6l</a> ]</p>
Assam	<p><b>8</b></p> <ol style="list-style-type: none"> <li>1. Ham Radio Emergency Communication System was demonstrated by Shri Sandeep Baruah, Scientist, Vigyan Prasar at <b>Guwahati Medical College</b> during a workshop on ham radio: <a href="http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/The_Assam_Tribune_HamRadio_News.jpg">http://www.qsl.net/vu2msy/documentation/Ham_Radio_in_Vigyan_Prasar_In_National_Media/The_Assam_Tribune_HamRadio_News.jpg</a></li> <li>2. Two workshops were conducted by Shri Baruah at <b>IIT Guwahati</b>. Related News: <a href="http://www.qsl.net/vu2msy/IITWorkshop.htm">http://www.qsl.net/vu2msy/IITWorkshop.htm</a></li> <li>3. Girijanada Engineering College</li> <li>4. Assam Police Radio Organization HQ ( 2 )</li> <li>5. Royal Global Engineering College/School</li> </ol>
West Bengal	<p><b>2</b></p> <ol style="list-style-type: none"> <li>1. A Ham Radio workshop was conducted at Birla Industrial and Technological Meuseum Kolkata on April 18, 2015 where 150 students from different schools participated. Study materials were provided to the students.</li> <li>2. Shri Sandeep Baruah, Scientist-E from Vigyan Prasar was invited as a "<b>Guest of Honour</b>" to the <b>East India Ham Conference 2017 held at Kolkata, Mandarmoni Beach, West Bengal on 28 January, 2017</b> -organized jointly by Amateur Radio Convention and Conference Samity (ARCCS) Kolkata and by Society Of Radio Amateurs (SORA), Patna -- two ham radio promoting societies. <b>A technical session was conducted by Shri Baruah where 100 hams from different states from East India participated.</b></li> </ol>
International Visibility/Pro motional activity at	<p><b>Apart from outreaching programmes conducted across the country Vigyan Prasar is also Internationally visible for its contribution to promoting ham radio (Amateur Radio)</b></p> <ol style="list-style-type: none"> <li>1. A Research Paper by NSA's [ <b>National Security Agency, USA</b> ] <b>Pacific Northwest National Laboratory</b> titled '<b>Radio noise: Global economic and political impact</b>' cited research work of Shri Baruah,</li> </ol>



International Level	<p>In their paper, reference cited by them can be found at page no. 28, ref no. [ 32] Their PDF newsletter titled <b>"The Next Wave"</b> [ 20th Anniversary Issue Vol 20   no. 1   2013 ] citing me can be accessed at:  <a href="https://www.nsa.gov/resources/everyone/digital-media-center/publications/the-next-wave/assets/files/TNW-20-1.pdf">https://www.nsa.gov/resources/everyone/digital-media-center/publications/the-next-wave/assets/files/TNW-20-1.pdf</a>  [ Ref to his work at Page No. 28 ]  [ <a href="https://tinyurl.com/yb3hxqtp">https://tinyurl.com/yb3hxqtp</a> ]</p> <p>2. His Research Work in Digital Communication was cited in an international paper  <a href="http://www.researchgate.net/publication/268100793_A_Low_Energy_APRS-IS_Client-Server_Infrastructure_Implementation_using_Raspberry_Pi">http://www.researchgate.net/publication/268100793_A_Low_Energy_APRS-IS_Client-Server_Infrastructure_Implementation_using_Raspberry_Pi</a>  [ <a href="https://tinyurl.com/zuds57u">https://tinyurl.com/zuds57u</a> ] by the students of Faculty of Electrical Engineering, University of Sarajevo and Faculty of Engineering and Information Technologies, International Burch University Sarajevo, Bosnia and Herzegovina in their Research Paper <b>"A Low Energy APRS-IS Client-Server Infrastructure Implementation using Raspberry Pi"</b>. The <b>"Rationale" of their project</b> is said to be from his research work cited in <b>Page No. 2 of the paper for the 22<sup>nd</sup> Telecommunications Forum (TELFOR) Conference at Belgrade, Serbia.</b></p> <p>3. <b>A full Length Research Paper on Amateur Radio was presented by Shri Sandeep Baruah is published in the final compendium brought out by TIFAC, DST in 2015.</b> The paper was accepted and presented at the 6th Annual Conference of the International Society for <b>Integrated Disaster Risk Management IDRiM -TIFAC 2015 on "Disaster Risk Reduction: Challenges and Opportunities for Sustainable Growth"</b> held from <b>28-30 October 2015, New Delhi</b> [ The "Research Paper" Entitled "Radio Based Approach for Disaster Risk Reduction and Management Using Automatic Packet Reporting System and Ham Radio (Amateur Radio) Digital Communication Technologies" was accepted by a panel of International Experts of IDRiM (International Society for Integrated Disaster Risk Management) and published in their compendium  <a href="http://idrimjournal.com/">http://idrimjournal.com/</a> The seminar was sponsored by Ministry of Science &amp; Technology, Govt. of India, ISRO, United Nations, Ministry of External Affairs, Oxfam and organized by TIFAC (Technology Information, Forecasting and Assessment Council, Department of Science and Technology, Govt. of India  <a href="http://www.tifac.org.in/">http://www.tifac.org.in/</a> )</p>
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Nearly 400 amateur radio outreaching activities were conducted by him during the last 20 year. Digital Mode of Communication is his domain of expertise which is motivating the younger generation to take up amateur radio for various digital communication experimentations.

































VU2JHM (President, Bangalore Amateurs Radio Club)  
Mother's International School











DR. SANDEEP BARUAH





on Ham-

by

EP BARU

1 Prasar, New

la Chowdhur

and Technolog







...tics section  
...branch









Station LA3LIA-2

63.24.20N 010.24.13E

Heard (t) 11:56:46 1 min ago

Bearing 329 deg

Distance 6057.2 km

W. dir 202 deg, speed 3.1 m/s 11.3 kmh

W. gust 8.0 m/s 29.0 kmh, chill 9.4 C

Temp 12.2 C, Dewp 5.8 C

Hum 65 %

Baro 999.7 hPa





















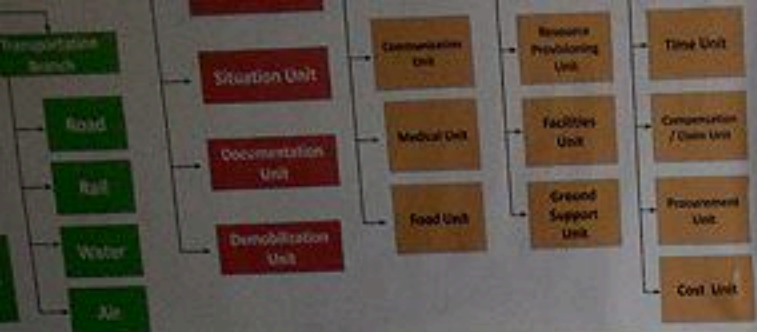












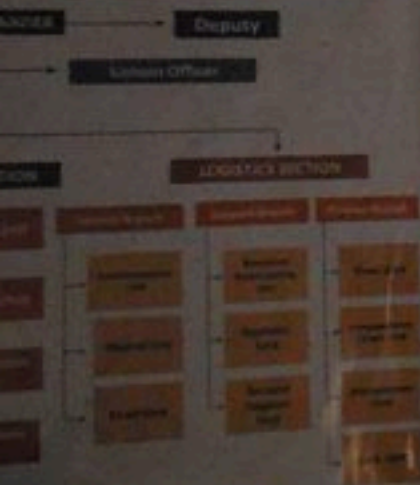
C-24, Qutab Institutional Area  
New Mehrauli Road  
<http://www.vigyanprasar.gov.in>

Personal web <http://www.qsl.net/vu2msy>  
APRS Dem page <http://www.riverdevil.org/APR>  
E-mail [sandeep@vigyanprasar.gov.in](mailto:sandeep@vigyanprasar.gov.in)





## System Organisation Chart









"health, safety, security or economic well-being of citizens or the effective functioning of governments" stated by [14].

In recent years cheap and energy efficient (low energy) microcomputer devices such as Raspberry Pi (RPi) microcomputer became available which are suitable for education purposes [15, 16, 17, 18] which we used in our project to establish infrastructure for APRS reporting. Together with RPi it is possible to use software (in our case open source software) called software defined radio (SDR) to avoid using expensive hardware components where functions of hardware components are performed by software components [19]. The SDR Forum, in collaboration with the Institute of Electrical and Electronic Engineers (IEEE) P1900.1 group defined SDR as:

*"Radio in which some or all of the physical layer functions are software defined" [19]*

Today there are numerous commercial SDR solutions (hardware and software) with prices in thousands of dollars.

#### *C. Open source SDR, and hardware components for APRS client – server infrastructure*

Together with SDR open source solutions such as *pymultimonaprs* [20] it is possible to use cheap hardware (digital receivers attached to PC) to capture analogue or digital signals and use them to process captured signals on microcomputers such as RPi. In this way it is possible to build cheap SDR solutions which can be used for APRS-IS infrastructure. Core hardware component for this solution is digital receivers which uses RTL2382U [21] chipset which are used as DVB-T tuner for reception digital signals. Functionality of this chipset is to capture

#### *D. Rationale for establishing APRS using IGate on Raspberry Pi*

We wanted to achieve more than one goal in this project because of APRS-IS potential in [24]:

*"Accurate position information about mobile & fixed stations, direction finding for precise beaming. Tracking a mobile station [useful during emergency operation/tactical situation], Non-ham family members of a ham can track him/her and read messages. During emergencies, if the Internet does not fail. Monitoring of real-time weather information originated from ham radio weather stations. Plotting of objects on the map. For example an accident site, crash site, intimation about a traffic jam for route planning, fire site, flood, cyclone, land-slide, road blockage etc. Allows important information to be exchanged without human intervention. This is important during a tactical or emergency situation, when we need to concentrate on other important jobs [for example 'Search & Rescue']."*

First goal was to test, research, and to build infrastructure for other projects and for potential disaster situations where radio communication was used [1,2,3] and can be used, and to involve other education institutions in similar projects. This will contribute in future research activities by offering research students real playground for hands on and test activities instead of using simulators. Well educated individuals in alternative communication can play crucial role in any ongoing or post disaster situation. Second goal was to use lessons learned, to build and document study case and to propagate practical and hands-on knowledge for education purposes. Third goal was to build initial infrastructure with two iGate nodes located at two sites in Sarajevo city





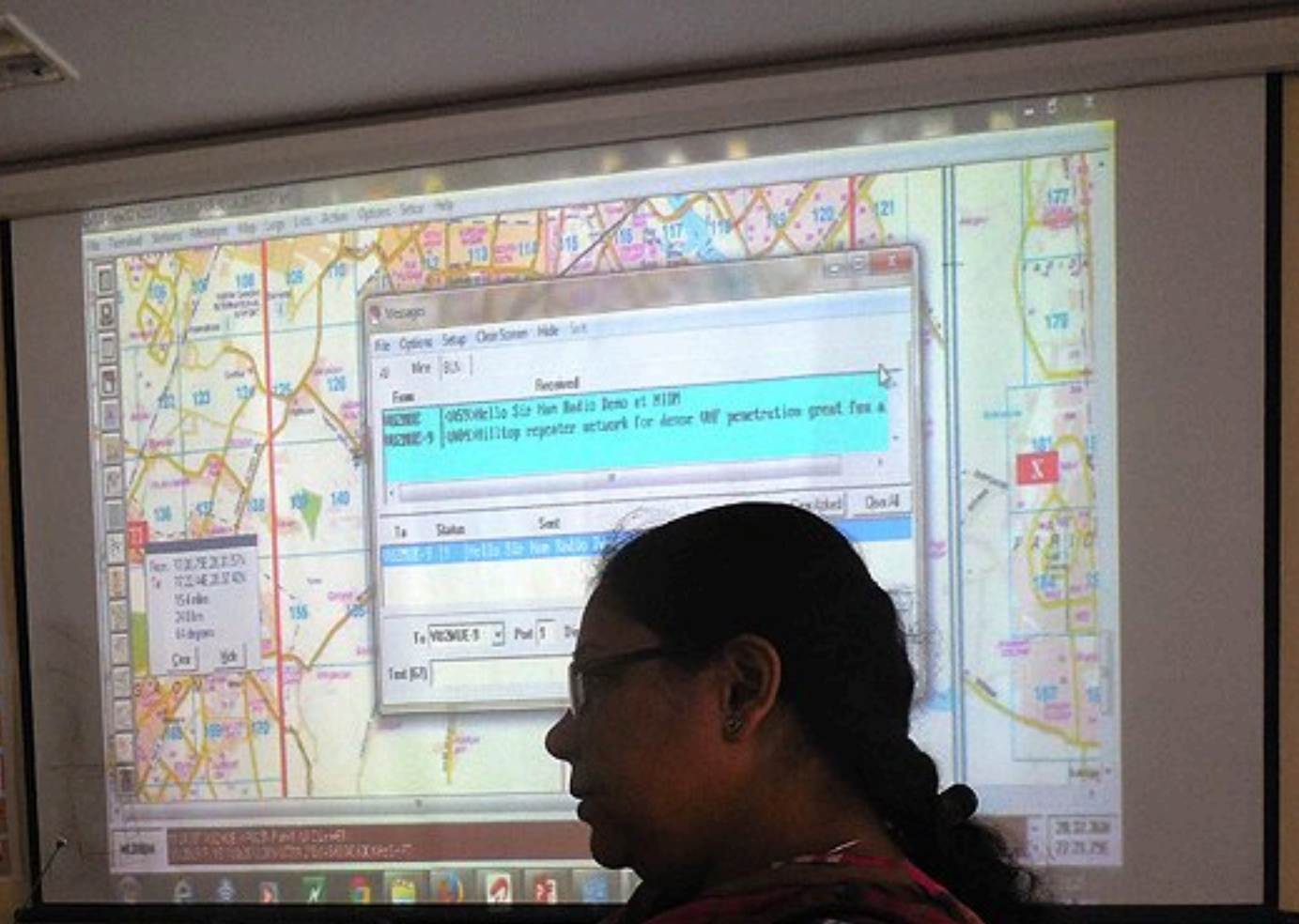












SANDEEP BARUAH



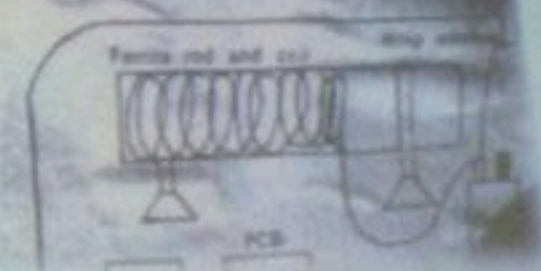
# OFF-TIME ENGAGEMENT SCHEME

## Toy Transmitter

*Off time engagement scheme*

Many a time you must have seen a policeman communicating with the headquarters or the nearest police station with a wireless transceiver in some riot run or distressed area. Furthermore, you must have also wondered about the working and building up of the transceiver and how quickly it helps in communications in this modern era. Well, the best answer to this project too is to explain the fundamentals of transmitters to

box through the opening. Now fix the Ferrite Rod with the coil a little above on the side of the variable capacitor. Then fix the



























KENWOOD FM DUAL BANDER TSM-Q700

145.825  
TONE REV LOW MUTE CTRL

DATA KENWOOD

NooElec  
NOO-USB-1.0  
NOO-USB-1.0





NIDM  
31 October











Workshop  
at Goa

Technology Communication  
Technology,  
Delhi  
Council, Goa















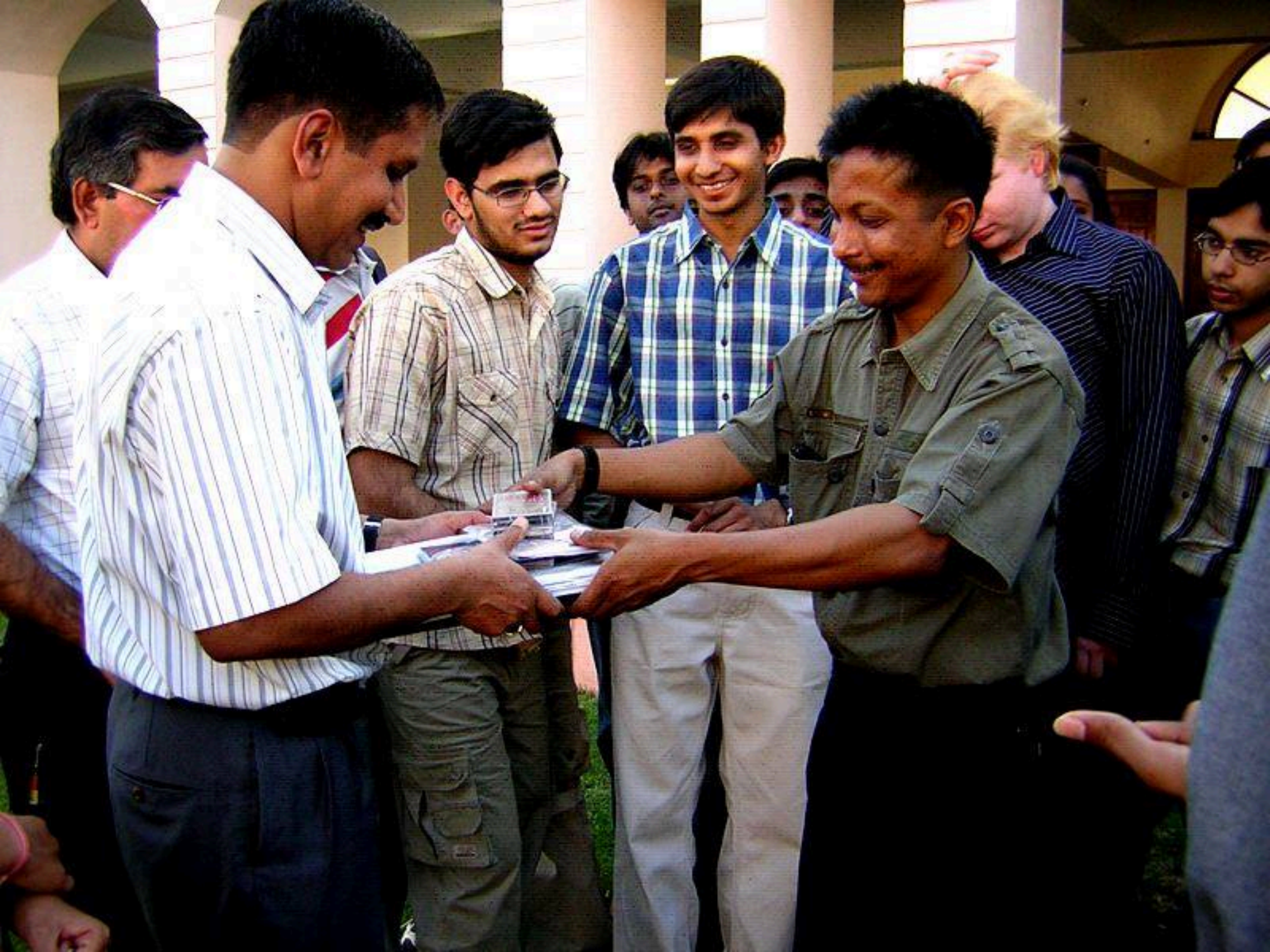




















# STATE LEVEL HAM RADIO ORIENTATION TRAINING WORKSHOP

*Jointly Organized by:*

UTTARAKHAND STATE COUNCIL FOR SCIENCE & TECHNOLOGY (UCOST), DEHRADUN

&

ANIL PRASAD, DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA, NEW DELHI

*In Association with:*

DISASTER MANAGEMENT AND MITIGATION CENTER (DMMC), GOVT. OF UTTARAKHAND, DEHRADUN

&

DOON UNIVERSITY, DEHRADUN

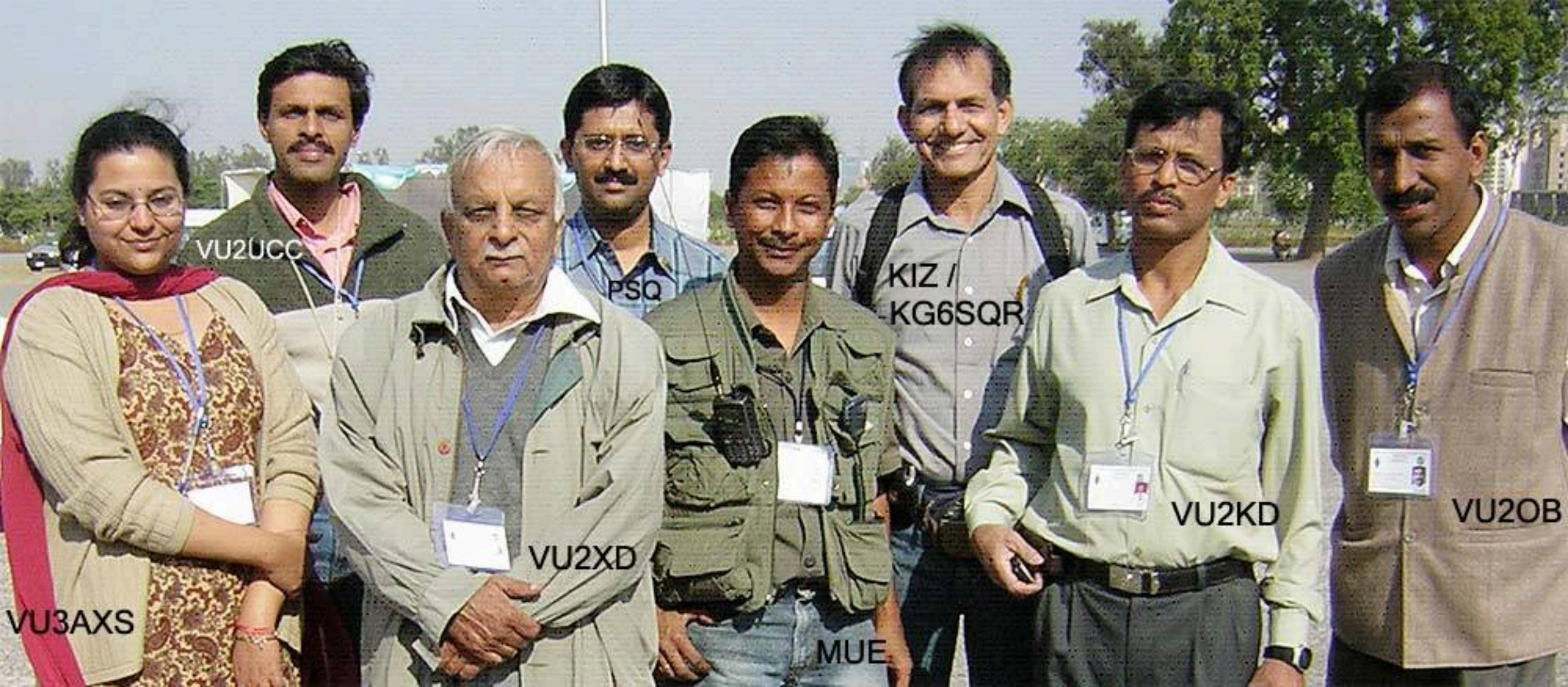
Doon University, Dehradun

Date: 26-27 October, 2012









VU2UCC

PSQ

KIZ /  
KG6SQR

VU2KD

VU2OB

VU2XD

MUE

VU3AXS













**Demonstration of Ham Radio to an Army Personnel at Shimla**

































VU2MUE

VU3SYP



**Evolution of Ham Radio**

**Digital Communication Technologies**

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9246812011 (Mobile)  
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http://www.vg-komtechnologies.com

<http://www.riverdevil.org/APRS/vu2muc>

VIT

















ols/formats  
Research Paper

NET BASED  
REDUCTION AND  
PATIAL INFORMATION  
CKET REPORTING

scientist-D  
& Technology New D  
APRS/vu2mue



**Joint International Workshop of  
ISPRS WG VIII/1**

**on  
Geospatial Data for Disaster  
Reduction'**

November 21-22

























## IV

### कैडेट्स को सैटेलाइट सिस्टम बारे दी जानकारी

हिंसार, 7 अक्तूबर (ब्यूरो) : हरियाणा कृषि विश्वविद्यालय में हरियाणा आर.एंड वी. स्क्वाडन एन.सी.सी. में प्रशिक्षण शिविर में कैडेट्स को सूचना सम्पर्क के बारे में जानकारी दी।

इस मौके पर दिल्ली से आए अधिकारी संदीप कुमार ने सैटेलाइट सिस्टम की कारीकियों की जानकारी दी। उन्हें बताया गया कि कैसे जी.पी.एस. सिस्टम प्रणाली कार्य करती है। इस मौके पर कैडेट्स को अभ्यास करवा करके भी दिखाया गया। प्रशिक्षण शिविर के मौके पर लै. कर्नल पी.पी.बोरा, मेजर मुखबीर सिंह, पवन कुमार भी मौजूद थे।



कैडेट्स को सैटेलाइट सिस्टम की जानकारी देते हुए अधिकारी।



















## Training and Response in India

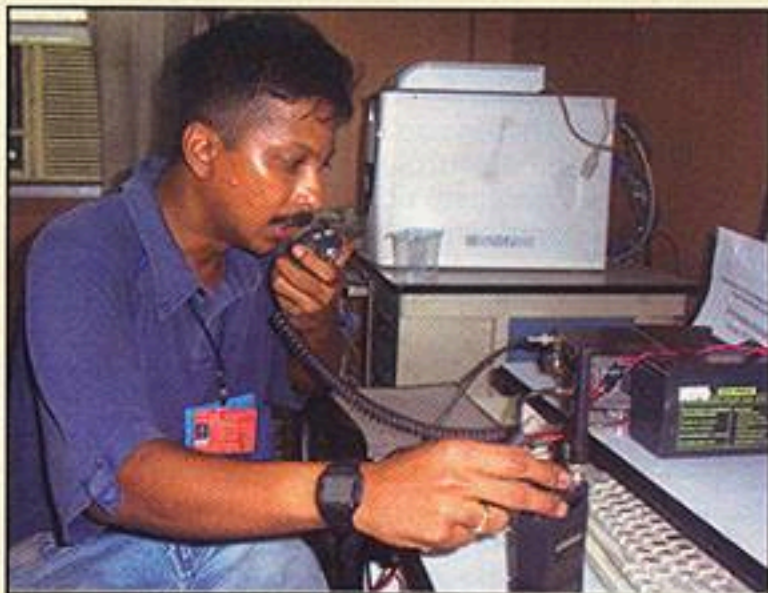
North America is not the only place amateur radio operators are active in emergency communications. Hams in India and other countries actively provide emergency communications support. This past summer, amateur radio operators participated in a simulated earthquake communications drill in the Northeast District of Delhi.

The Delhi Disaster Management Authority notified local hams about the "earthquake." Immediately, three teams of ham radio operators rushed to several critical locations to provide emergency communications. Stations were established at the Office of the Delhi Disaster Management Authority, Police Headquarters, Office of the Deputy Commissioner of Police, and the Divisional Commissioner's office.

According to Sandeep Baruah, VU2MUE, the communications teams brought mobile rigs, antennas, batteries, and solar-panel power backups. A digital communication setup was also established at the Divisional Commissioner's Office. Two-meter links were established on simplex when the local repeater "failed" because of the earthquake. HTs were also used for local communications. Messages were passed from the "disaster site" on behalf of the police and fire departments. Government officials visited the ham stations and felt that amateur radio can play a very important role in disaster communications. The hams were also able to demonstrate the use of Echolink in emergency communications and the potential for retrieving weather information.

In July, five members of the Mumbai Amateur Radio Society (MARS) sprang into action on behalf of the Ministry of Home Affairs and the United Nations Development Program. They were sent to the flood-ravaged areas of Bihar.

Nilesh Rathod, head of the local Amateur Radio Emergency Service, said, "There is a huge crisis in Bihar, but what is startling



Sandeep Baruah, VU2MUE, provides communications during a simulated earthquake exercise. (Photo courtesy of VU2MUE)

is that everyone seems used to the floods and the horrific living conditions."

He said that in the town of Sitamarhi the roads and rails were washed away. The local residents were building bamboo bridges to and charging people to cross them. That is how they recovered the cost of making the bridge and earned a living.

In order to get to his communication assignments, Nilesh would have to jump into a Jeep or risk wading through leech-infested waters.

cedures for emergency incidents. "For the first time," Ridge now says, "the National Response Plan provides a comprehensive roadmap for everyone to follow. As part of this plan, the National Incident Management System was introduced so that those involved in emergency response understand what their role is—and have the tools they need to be effective. It's the nation's first-ever standardized approach to incident management and response and it unifies federal, state, and local lines of government into one coordinated effort. This integrated system makes America safer by establishing a uniform set of processes, protocols, and procedures that all emergency responders—at every level of government—will use to conduct response actions."

## All-Star Playbook

Ridge describes the system as "the playbook for the NFL Pro-Bowl Game." "When you bring together the best players from 26 different teams," he explains, "a plan of 'blue 42, slant right, release' might mean one thing to the quarterback, another thing to the wide receiver, and yet another to the linemen. At the call of 'hike,' chaos might break out on the field. At the very least, the play won't be successful. Now everyone shows up on game day with the same playbook. They will have the same preparation, the same goals and expectations, and—most important—they will be speaking the same language. When the quarterback calls a play, everyone will know what they are supposed to do. And in this battle, safety is far better than two points—in fact, it is the only result worth anything at all. Of course, a plan is nothing without the people to execute it, and many of you will play a vital role should we ever have to put our plan into action."

## Ham Radio is Ready

Now let's take a look at some of the ways amateur radio is

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19:02:20  
10:34:32 A

These are the basic technical skills every ham  
try to learn. Knowledge and skill is  
disseminated from one person to the other.

# Who is a ham?

A ham is a person who is a  
licensed amateur radio operator.

Software interface showing a list of items, possibly a database or a file explorer.



UTTARAKHAND STATE COUNCIL FOR SCIENCE & TECHNOLOGY (UCOST), DEHRADUN

&

VIGYAN PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA, NEW DELHI

DISASTER MANAGEMENT AND MITIGATION CENTER (DMMC), GOVT. OF UTTARAKHAND, DEHRADUN

&

DOON UNIVERSITY, DEHRADUN

Venue: Doon University, Dehradun

Date: 26-October, 2012

Er. Sandeep Baruah

Dr. Rajendra Dobhal

Dr. V.K. Jain

Dr. Sarita Khandka

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VIGYAN PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY















# बड़े काम का है हैम रेडियो का डिजिटल रूप

कार्यालय संवाददाता

कानपुर

रेडियो और इंटरनेट का भला क्या संगम है। क्या बिना सरकारी नियंत्रण के अपना रेडियो सेटअप तैयार किया जा सकता है। बिल्कुल, टेककृति में बतौर गेस्ट लेक्चरर आए विज्ञान प्रसार के साइंटिस्ट संदीप बरुआ ने हिन्दुस्तान को 'हैम रेडियो' के आधुनिक और डिजिटल रूप की जानकारी दी। बतावा कि आपातकाल में जब सारे सिस्टम ध्वस्त हो जाते हैं, तब भी हैम रेडियो की मदद से सूचनाओं का आदान-प्रदान किया जा सकता है। हैम रेडियो को कंप्यूटर से और कंप्यूटर को इंटरनेट से जोड़कर टेक्स्ट मैसेजिंग, फाइल अपलोड-डाउनलोड की जा सकती हैं।

श्री बरुआ ने बताया कि दरअसल हैम रेडियो वायरलेस वेस्ड टू वे कम्युनिकेशन है। बोलचाल की भाषा में यह इंटरनेट ऑफ दि पासट है। विश्वभर में रेडियो पर बातियाने के शौकीन सालों से हैम रेडियो के दीवाने हैं। बहुत कम खर्च में और साधारण सी किट के साथ इसका प्रयोग किया जा सकता है। इसके लिए सरकार से लाइसेंस लेना जरूरी है।



संदीप बरुआ

सरकार की ओर से संचार पर पाबंदी लगाने, प्राकृतिक आपदा के दौरान भी हैम रेडियो पर संपर्क बना रहता है। इसीलिए इसे थर्ड पार्टी कम्युनिकेशन कहा जाता है। गुजरात में भुज में आए भूकंप के दौरान यह बहुत कारगर रहा। श्री बरुआ ने बताया कि इसका आधुनिक रूप और भी उपयोगी है। टू वे ट्रानसीवर (ट्रांसमीटर और रिसीवर) को लैपटॉप के साथ इंटरफेस कर रेडियो वेक्स की मदद से इंटरनेट से जोड़ा जा सकता है। इसके बाद टेक्स्ट मैसेजिंग से लेकर फाइल्स की अपलोडिंग-डाउनलोडिंग सब संभव है। डिजीपीटर (डिजिटल रिपीटर) होना जरूरी है। हैम रेडियो का आधुनिक रूप वार्तालाप, मौज मस्ती के साथ ही कम्युनिटी सर्विस में भी कारगर है। देश में वेदर फोरकास्टिंग के लिए करीब 20 हजार स्टेशन की जरूरत है। हैं सिर्फ 300। हैम रेडियो को वेदर स्टेशन से जोड़कर किसानों को मौसम और फसल सम्बन्धी जानकारी देकर उत्पादन बढ़ाया जा सकता है।

हिन्दुस्तान

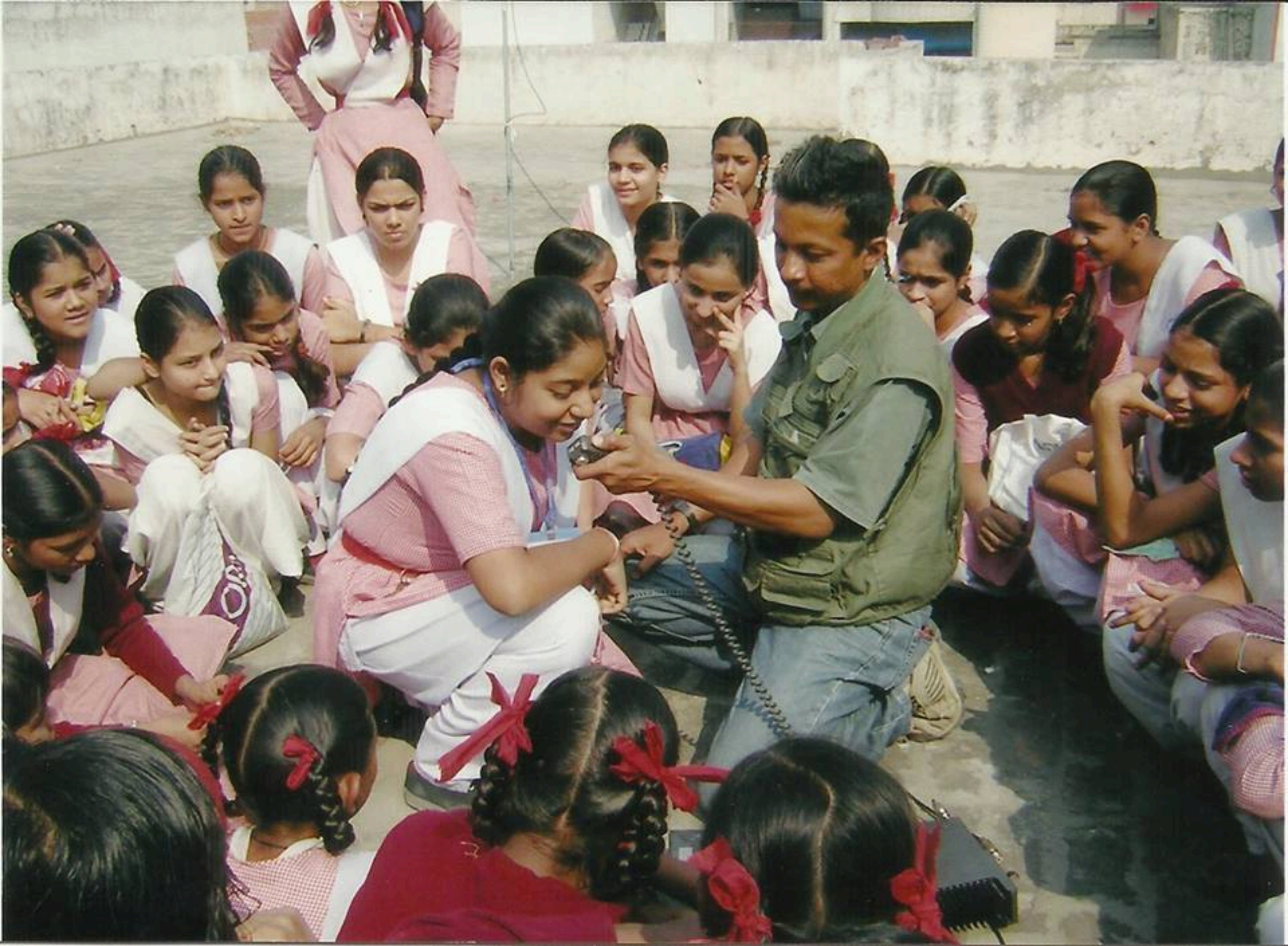
कानपुर

भविष्य में फैब्रिकेशन मोबाइल सेन्सर, आकार में उन्हें बुक रखा और इस तकनीक सस्ते और विश्वसी कानपुर गुरुव नॉलेज आयोजित लेने आए फैब्रिकेशन 10 वर्षों चिप तैयार, दफा चाबियों किया ज अलग मिलेगा ज्यादा तकनीकी

























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## GPS CONSTELLATION

The GPS Constellation consists of 24 satellites in 6 orbits. Each satellite is equipped with an atomic clock and a receiver. The satellites transmit signals to the ground stations, which then transmit the signals to the user's receiver. The receiver uses the signals to determine its position and time.



## FREQUENCY RANGE FOR GPS SYSTEM

BAND	FREQUENCY	DESCRIPTION
1	1575.42 MHz	L1 band, used for civilian GPS receivers. It is the most common band used for GPS.
2	1227.60 MHz	L2 band, used for military GPS receivers. It is also used for civilian GPS receivers that support L2.
3	1575.42 MHz	L3 band, used for military GPS receivers. It is also used for civilian GPS receivers that support L3.

## GLOBAL POSITIONING SYSTEM





# Ham Radio

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Sandeep Baruah [ **VU2MUE** ]

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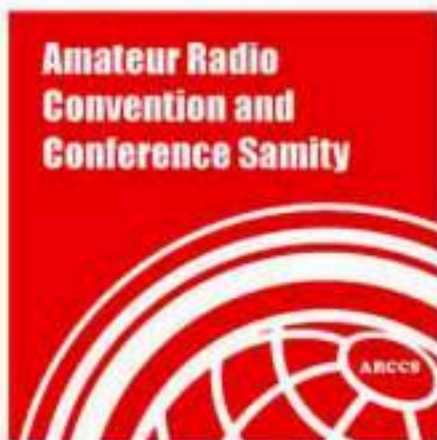
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## Special Guests of Honour:

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Chairman - Board of Directors, IARU Region 3

President - Amateur Radio Society of India

*Shri Jayant Shankar Rao Bhide (VU2JAU)*

President - Gwalior Amateur Radio Club

National Coordinator - Disaster Communications

## Keynote Speakers:

*Shri Sandeep Baruah (VU2MUE)*

Scientist - Vigyan Prasar, Department  
of Science & Technology, Govt. of India

*Shri Dinesh Chandra Sharma (VU2DCT)*

Secretary - Hindustan Aeronautics Limited  
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# हैम रेडियो के वैज्ञानिक उपयोग से बचेगी जान

देहरादून। यूकॉस्ट और ईएमआरआई 108 ने साथ मिलकर शनिवार को विज्ञान प्रसार नोएडा की तकनीकी सहायता से हैम रेडियो पर विशिष्ट व्याख्यान और प्रदर्शन कार्यशाला का आयोजन किया। उत्तराखंड के दूरस्थ क्षेत्रों में मोबाइल नेटवर्क के काम न करने पर विकल्प के रूप में हैम रेडियो के उपयोग की जानकारी दी। कहा कि इसके वैज्ञानिक उपयोग से लोगों की जान बचाई जा सकेगी।

कार्यशाला में विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरुआ ने कहा कि पूरे उत्तराखंड में 2-3 हैम रिपिटर स्टेशन लगाकर यूकॉस्ट की सहायता से बने 32 हैम रेडियो लाइसेंस होल्डर के नेटवर्क से मोबाइल एंबुलेंस, ईएमआरआई कॉल सेंटरों के संपर्क में रह सकती है। कार्यशाला में यूकॉस्ट के वैज्ञानिक अधिकारी डॉ. डीपी उनियाल, डॉ. बीपी पुरोहित, डॉ. आरएस भारद्वाज, जिला समन्वयक डॉ. प्रशांत सिंह, रवींद्र, भास्कर, निर्मल रावत आदि रहे।











## CITY BUZZ

# Ham Radio network to be set up in Kaushambi

The Kaushambi Apartments Residents Welfare Association (KARWA), announced a VHF/UHF ham radio repeater network soon to be made functional at Kaushambi under the disaster mitigation plan. An awareness programme and workshop on

ham radio (Amateur Radio) was organised by Kaushambi Apartments' Resident Welfare Association (KARWA) at Nanda Apartments, Ghaziabad on October 11 where children and senior citizens of the area got an opportunity to see the functioning of various ham

radio technologies.

Sandeep Baruah, scientist-D from Vigyan Prasar (Department of Science and Technology, Govt. of India) deliberated a presentation emphasising the need to establish a ham radio and electronics club for the children of the area which will help establishing an alternative radio communication network as a hobby and public service activity.

Various instruments were installed at the roof of the 14th storied Nanda Apartments and its functioning was explained with the help of Vigyan Prasar Repeater Station (VU2DLR) located at South Delhi.

Hams (Amateur Radio Hobbyists) from all over the NCR region participated and assisted the programme by making radio contacts with the temporary ham radio station installed at Nanda apartments. Children were thrilled to exchange pleasantries with senior hams. Francis

During the deliberation, Sandeep Baruah (Scientist-D, Vigyan Prasar, DST) emphasised the formation of the people's own ham radio alternative radio communication network as a 'hobby' and as a 'do-it-your-

their own communication network without depending on other service providers. To establish an effective communication to be functional, it was suggested that several low cost UHF/VHF Ham Cross



Rebello (Ham call VU2XLZ) talked at length to the children via the ham radio setup from his ham radio station located at Green Park. Students were delighted to talk to him via the two-way ham radio communication system. Hams from as far as Gurgaon also came on-the-air to assist the demonstration.

self activity', which would also be useful in the event of any kind of emergency, because when the public telephone network and cellular telephone network break down during large scale disasters, people with ham radio licences and their personal radio communication equipments would be able to maintain

Band Repeater station may be installed on top of all the skyscrapers at Kaushambi. A similar setup was demonstrated to the children. A Ham Radio Club is in the process of formation where hams located near Kaushambi would provide their voluntary support in training the children and other interested people.

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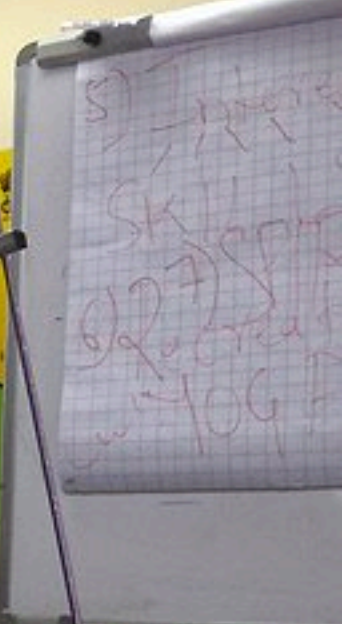
The governmental agencies  
have their own radio  
communication channels already  
existing

- The Police-
- Armed Forces-
- Para-military Forces
- Fire Department-
- Inland Water Department-
- Meteorology Department-
- Electricity Department-











■ REEMA GOWALLA

WITH sophisticated tablet computers, smartphones and zillions of social networking sites floating around the Internet, communicating with friends and dear ones does look simple and convenient, but imagine a day when all of these are snapped off in the blink of an eye by a powerful earthquake. That is when an amateur or ham radio comes in handy.

Primarily a recreational activity, amateur radio enables operators — also known as hams — to pick up airwaves to discover a new voice from an unknown land. But it has the potential to be an immensely useful disaster management tool, especially in times of an earthquake, flood, cyclone and even tsunami.

The concept and importance of ham radio — which involves the use of a combined unit of transmitter and receiver, called transceiver, to facilitate a two-way communication between broadcasters across the world — is yet to grab most people's attention. But this does not discourage the small spirited community of operators who consider it a self-training activity involving technical creativity and experimentation with wireless communication.

Sandeep Baruah — principal scientific officer at Vigyan Prasas, department of science and technology — explains, "It's their love for radio science and the thrill of communicating with mostly self-assembled electronic devices that keep ham radio operators pursue their interest."

A portable amateur radio set can be operated using batteries and even solar power. And because only specific individuals attempt to connect with each other through radio waves, it hardly falls unlike most wireline services, phone and internet networks, which often fall victim to jammed bandwidth and overloaded routers during natural calamities.

The hobbyists are referred to as amateurs because their systems are not included in commercial broadcasting or similar two-way radio services often used by the defence forces or firefighters.

An avid ham himself, Baruah first established his station at Assam Agricultural University, Jorhat, in 1989. "It is an interesting method to discover new friends and disseminate knowledge among one another. Hams discuss almost everything under the sun, for which they run 'nets' at scheduled times and previously decided frequencies," he says.

Over decades, these enthusiasts have helped to form new industries by significantly contributing to science, technology, engineering and social services. But the crucial role they play during crises and natural disasters deserves special mention.

The techno-tinkers can quickly set up networks, helping speed up disaster relief. The 2004 tsunami cut nearly all communications with the Andaman Islands. Ham operators are not allowed to set up shop there because of security reasons, but a group of enthusiasts on vacation there did manage to get a station up and running. They then transmitted updates about the disaster to authorities in Delhi and other cities.

Baruah himself was in Delhi at the time and among those in touch with this group of hams in the Andamans. He says, "I had received messages from different parts of the country and abroad, which I relayed to those stationed at Port Blair and vice versa."

Hams also supported rescue activities after the 9/11 terror attacks, Gu-

# Hams: Riding the radio waves

This band of original social networkers continues an old tradition of licensed amateur broadcasting



SAY HELLO: Sandeep Baruah demonstrating his amateur radio equipment in front of schoolchildren during a workshop.

jarat earthquake in 2001, North America blackout in 2003, Hurricane Katrina in 2005, Sichuan earthquake in 2008 and more recently the 2010 Haiti earthquake.

## Ham hum

Just a simple wire antenna connected to the transceiver is enough to attract ham radio frequencies. Licence bearers work using frequencies internationally allotted to them. If a particular wave is not already being used by another ham, it can be used to give a call to the operator in question.

However, the calling procedure should adhere to international radio regulations.

One can give a general, or CQ, call to all stations around the world with his or her assigned 'call sign' on air to legally spot a specific operator or station.

With advances in the field of electronics and technology, ham radio has also undergone a lot of changes over the years. Like mobile phone users, ham enthusiasts can now send text messages.

Operators can even connect their radios to the web. For example, ham equipment connected to the internet in Guwahati can receive messages from other ham radio users in the city, while their conversation can be routed across the world through a system called Echolink.

Digital ham radio is a smart mode of

**ONLY** specific individuals attempt to connect with each other through radio waves, therefore, it hardly fails unlike most wireline services, phone and internet networks, which often fall victim to jammed bandwidth and overloaded routers during natural calamities

communication. Here all details are sorted into standard-sized digital packets, which are then automatically transmitted using radio waves in small bursts. Through 'packet radio', data can be transmitted in various formats including document, image or even video. To send or receive radio mails, hams need to connect their devices to the computer and log on to a local ham radio server. The receiver gets only the correct data, thanks to an automatic error detection system.

For instance, if a transmitted message reads: "Hello, I am now at the rescue camp. So far, 90 people have been evacuated." And if, due to some radio wave propagation problem, the signal is weak at the receiver's end, 90 may be digitised or demodulated as 9. But the packet modem has a firmware which is in-

telligent enough to understand that the figure is not accurate, and so the radio connected to the computer will send back automated re-send request to the sender.

One can also send emails with the help of free software called 'Airmail', which functions more or less like Microsoft Outlook and can be useful at remote areas devoid of internet facilities.

Sharing an instance, Baruah says, "I get messages from a sailor ham friend through such a system. He keeps sending stories while on long-distance voyages. He is supported by Winlink 2000, an all-volunteer project that arranges for sending emails through radio."

And there is more: hams can also receive images from space now. NASA launched a low earth orbit satellite recently enabling hams to lift pictures using a handheld transceiver and a tiny beam antenna called Yagi.

ISRO also launched a microsatellite called HAMSAT in 2005, enabling India to become one of the few countries in the world to launch an amateur radio satellite.

## Highs & lows

The story of ham radio starts at the beginning of the history of radio itself. In 1895 when Guglielmo Marconi, beginner of long-distance radio broadcasts began sending signals over vast lengths, he also became the first amateur radio broadcaster. That same year Nikola Tesla also sent transmissions in the US.

Indian scientist Sir J C Bose's experiments also contributed to the cause. Apart from providing voluntary help during national emergencies, hams are also said to have supported the Indian Independence movement.

Ham radio suffered a slowdown during global conflicts, when authorities suspended issuing licences and even asked operators to dismantle their devices fearing misuse of the technology by spies. However after the end of World War II, their number started growing again.

It is sad that despite making significant contributions over the years, little has been done to support the enthusiasts or at least raise awareness about ham radio among the public. Getting a licence is an uphill struggle, and so there are just about 15,000 authorised and practicing ham radio users in India, with a mere seven in the Northeast.

Following repeated petitions, the do-it-yourself activity was incorporated in the Central Board of Secondary Education (CBSE) syllabus in 2006, with occasional workshops being conducted on IIT campuses and other educational institutions across the nation. Hams feel the scope of amateur radio is unlimited and so introducing the activity to youngsters could boost their mental faculties as well as impart a sense of unity and self-empowerment.

The wireless, planning and coordination wing (WPC), which forms part of the ministry of communications and information technology, is the regulatory authority of amateur radio in India. Together with controlling radio waves, the WPC also assigns call signs and issues licences.

Any citizen above the age of 12, and with basic knowledge in electronics and radio science, is eligible to become an authorised ham operator after he

## Frequency facts



■ In the early days of amateur radio, most professional operators would use the term ham to taunt the hobbyists, leading to the popularity of the synonym later on.

■ Rewarding the contributions of amateur radio, a postage stamp was issued in the US in 1964.

■ Fox hunting is an interesting activity in which hams use direction-finding techniques to locate hidden transmitters.

■ Hamfests and DX-peditions are among the countable events conducted on regular intervals to promote amateur radio in India.

■ A deceased amateur radio operator is generally referred to as a silent key.

or she clears a 100-mark exam, conducted by the WPC at various wireless monitoring stations across the country. There are two such stations in the Northeast too — at Dibrugarh and Shillong — but due to concerns over ham radio turning into a security threat if fallen into the wrong hands, the examination has not been conducted in the region over the past few years.

Ritu Mahanta, a guest lecturer at an engineering college near the city, agrees that ham radio is an efficient tool for communicating during emergencies. Unfortunately, his own experience at getting a licence has been unsavoury. He first applied for it in 1990 as a student, but was rejected. Over time, he applied several times, to no avail. He then filed an RTI in 2011. "Today I have the equipment, but can only hear hams communicating. Until I get my own call sign, I cannot transmit."

But enthusiasts here argue that ham radio is a fairly simple set up and any suspicious use can be easily detected with the help of direction finding antennas or the method of triangulation. They feel such irregularities could just be another instance of red-tapism and discrimination.

However it's a different story in most other states outside the region where the density of hams is higher, thanks to special clubs and related activities. Bangalore is also usually called the ham radio capital of India.

The hobbyists think more should be done to promote amateur radio in the region, especially for young citizens, who can serve as a band of communicators when the most active networking tools are knocked out by a natural calamity.



# A Better Prepared Amateur Radio Response

**H**ave you been listening to or reading the comments of the homeland security and emergency management leadership? Have you heard their remarks and thought about how they apply to amateur radio? This month we'll take a look at a few of the puzzle pieces and see if we're getting the message.

## Preparation and Preparedness

For decades the Federal Emergency Management Agency has been responsible for preparing and responding to disasters. FEMA has now been integrated into the Department of Homeland Security as the department's Emergency Preparedness and Response Directorate, under the day-to-day direction of Chief Operating Officer Ron Castleman and Undersecretary Mike Brown, who often speaks on the topics of preparation and preparedness.

Over the summer, Secretary of Homeland Security Tom Ridge spoke at a Public Preparedness Symposium. In his speech, he discussed a tabletop exercise in which he and 25 governors participated. According to Ridge, the exercise pointed out that in many cases you do not have all of the information that you would like to have, but "you have to do something. You can't wait until you have it all."

Ridge continued, "You can't secure the country from Washington, DC. You need partners all around the country in order to make it safer and more secure ... Homeland security must be a priority in every home, every city, every neighborhood across America."

"Our goal is to achieve seamless protection, a nation knit tightly together by shared vigilance, readiness, and communication," said Ridge. "Vigilance, readiness, and communication. And nowhere is this more important than in the area of emergency preparedness."

"No government entity, no organization, no information expert can replace individual responsibility. Citizens must choose to take actions," Ridge continued. "And our job is to make the choice an easy one. The success of our preparedness efforts and ultimately the entire homeland security mission depends on the involvement and work of individual citizens. Because if our communities are to rise to new levels of preparedness and security, each individual American must choose to make emergency planning a priority—a priority in our homes and our places of work and in our schools."

## Disasters Spawn Preparedness

According to Secretary Ridge, "If you ask people in south Florida or the Outer Banks of North Carolina about preparedness, they already know about buying supplies, keeping extra batteries handy, and even having a hurricane evacuation route planned. They get it. They hope they're not



*Homeland Security Secretary Tom Ridge: "We've laid out a public goal, and you've got to help me meet it!" (Department of Homeland Security photo)*

going to be hit by a hurricane. Chances are pretty good ... they may or may not, but they're not going to wait for chance. They get prepared."

"I'm just amazed," said Ridge, "that more people don't think of it in terms of providing some peace of mind to their own lives and to their own families." He wants to see people "respond when they have to without thinking about it," and says he feels that "there is a willingness on the part of Americans to take on this responsibility."

## Public Goal

Ridge continued, "We've laid out a public goal, and you've got to help me meet it, please....that by the end of this year, we want at least 50 percent of Americans to have accepted their responsibility to be ready. It's a communication plan; some form of training to assist at the time of a disaster, the kit set aside, the readiness kit. We need to get 50 percent by the end of the year, and I think we can get it done."

"The Department of Homeland Security will add strength to the existing Ready Campaign by launching two new endeavors, Ready for Business, Ready for Kids. It will continue to work with the Citizen Corps to encourage participation from families across America, whether by preparing family ready kits and emergency plans or volunteering to aid in disaster planning or engaging in CPR and training exercises to help people in a life threatening situation."

"I've been amazed at the number of people who have come forward to serve on Citizen Corps councils. All walks of life, all backgrounds, all communities. I think we're near 1000 communities that have a Citizen Corps. You meet some fascinating people. One fellow is in charge of the emergency radio network. You've got a bunch of ham radio operators in a tri-state area. He's got them networked together."

## Unification

Before September 11th every state, every city, and even individual response teams had their own pro-

\*c/o CQ magazine

e-mail: <wa3pzo@cq-amateur-radio.com>



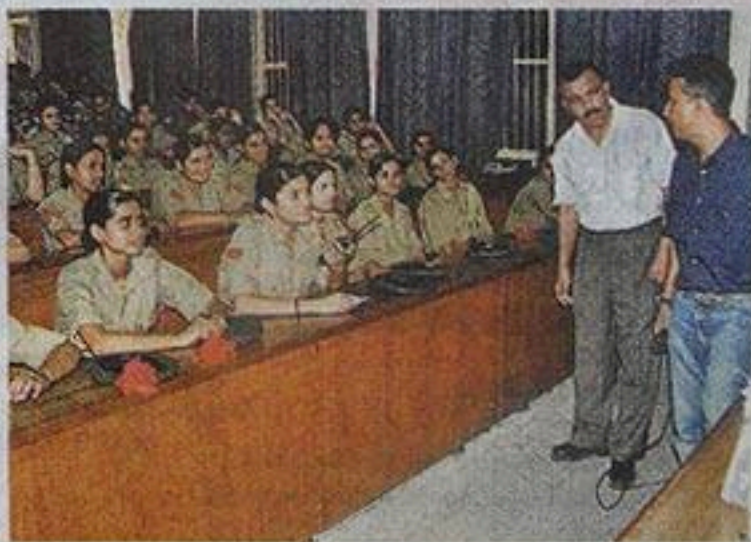




# शिविर में कैडेट्स ने हैम रेडियो के बारे में जाना

भास्कर न्यूज | हिसार

हरियाणा कृषि विश्वविद्यालय में चल रहे एनसीसी शिविर में कैडेट्स को गुरुवार को हैम रेडियो का प्रशिक्षण दिया गया। विज्ञान प्रसार केंद्र दिल्ली से आए वरिष्ठ वैज्ञानिक संदीप बरुआ ने सभी कैडेट्स को बताया कि इसके माध्यम से बिना किसी मासिक बिल के फ्री में बात, लाइव चैट, मैसेजों का आदान प्रदान किया जा सकता है।



हिसार. एचएयू में कैडेट्स को हैम रेडियो के बारे में जानकारी देते प्रशिक्षक।

उन्होंने बताया कि हैम रेडियो की एक मात्र ऐसा संचार का साधन है, जो कि हर परिस्थिति में काम करता है। फिर चाहे वह बाढ़ की त्रासदी हो अथवा सुनामी का सफाया। इससे कोई भी आदमी संचार साधनों से जुड़ा रह सकता है। वैज्ञानिक ने अपने प्रयोगों से भी कैडेट्स को परिचित करवा कि किस तरह से वायरलेस सेट के माध्यम से किसी स्थान विशेष का

तापमान जान सकते हैं अथवा वह कितनी दूरी पर किसी एंगल पर है। इतना ही नहीं वायरलेस से सेट कैसे मैसेज भेजा जाए।

किस तरह से आरकूट, याहू के तरीके से लाइव चैट किया जाए। उन्होंने बताया कि यह सब मुफ्त में मिलता है बस इसकी एक ही शर्त है कि इसे उपयोग करने

वालों की संख्या ज्यादा से ज्यादा हो। उन्होंने बताया कि इस समय देश में आबादी अरबों पार कर गई है लेकिन हैम रेडियो का उपयोग 15 हजार से भी कम लोग कर रहे हैं। कई सेलिब्रेटी ने तो हैम रेडियो ले तो लिया है लेकिन इसका उपयोग बहुत कम ही लोग कर रहे हैं।

## कर्मचारियों का प्रदर्शन, ज्ञापन सौंपा



# शाहटाइम्स

**ईएमआरआई व यूकोष्ठ ने किया गोष्ठी का आयोजन**

## चिकित्सा सुविधा में हेम रेडियो की उपयोगिता अहम्

विशेष संवाददाता

देहरादून। यूकोष्ठ एवं ईएमआरआई 108 में चिकित्सा सुविधा के क्षेत्र में हेम रेडियो के उपयोग पर संयुक्त गोष्ठी का आयोजन कर गहन विचार विमर्श किया।

इस तकनीकी कार्याशाला में प्रमुख वक्ताओं में यूकोष्ठ से निदेशक डॉ. राजेन्द्र डोभाल, ईएमआरआई-108 के प्रमुख कार्यकारी अधिकारी अनूप नौटियाल तथा विज्ञान प्रसार के वरिष्ठ वैज्ञानिक संदीप बरूआ ने उत्तराखण्ड के सुदूरवर्ती क्षेत्रों में फोन तथा मोबाइल नेटवर्क के काम नहीं करने का घायल या मरीजों के फोन प्राप्त न हो पाने के विकल्प के रूप में हेम रेडियो के उपयोग पर विचार व्यक्त किए तथा चर्चा में भाग लिया। श्री संदीप बरूआ ने समाधान प्रस्तुत करते हुए कहा कि पूरे उत्तराखण्ड में 2-3 हेम रिपिटर स्टेशन लगाकर यूकोष्ठ की सहायता से बने 32 हेम रेडियो लाइसेंस होल्डर के नेटवर्क द्वारा मोबाइल एम्बुलेंस ईएमआरआई काल सेंटर्स के सम्पर्क में रह सकती है। इसकी सहायता से एक्सोडेंट साइट पर एम्बुलेंस भेजने के लिए विभिन्न स्थानों पर हेम रेडियो सपोर्ट सिस्टम का प्रयोग किया जाएगा। इसके अनुप्रयोग का परीक्षण करने के लिए शीघ्र ही ईएमआरआई एक संचार रहित मरीज की अधिक संख्या वाला क्षेत्र देखकर यूकोष्ठ तथा विज्ञान प्रसार की सहायता से हेम रिपिटर स्टेशन (मानव जित) की स्थापना करेगी तथा परीक्षण एम्बुलेंस में हेम रेडियो की सहायता से संचालित एपीआरएस अटोमैटिक पोजिशनिंग रिपोर्टिंग सिस्टम लगाकर सम्पूर्ण नेटवर्क का उपयोग परखा जाएगा। यदि यह परीक्षण सफल रहता है तो यह पूरे उत्तराखण्ड में लागू करके दूर-दराज के क्षेत्रों के मरीजों के लिए स्वास्थ्य सुविधाएं समय पर प्राप्त करने का एक उपयोगी वैज्ञानिक माध्यम सिद्ध होगा।

इस कार्याशाला के उद्घाटन सत्र में अपने सम्बोधन में डॉ. राजेन्द्र डोभाल, निदेशक यूकोष्ठ ने कहा कि अन्य उपयोगी के साथ ही स्वास्थ्य सेवाओं के लिए हेम रेडियो के वैज्ञानिक उपयोग से दुर्घटना में घायलों व तुरंत चिकित्सकीय सुविधा की आवश्यकता वाले मामलों में जरूरत मंदों की जान बचाने में उपयोगी सिद्ध होगा। डॉ. डोभाल ने कहा कि हेम रेडियो का एम्बुलेंस गाड़ियों की स्पीड, दिशा, मुख्यालय से दूरी तथा एमएमएस भेजने में प्रयोग से आपदा संचार के क्षेत्र में शीघ्र ही सफलता हासिल होगी।

ईएमआरआई के मुख्य कार्यकारी अधिकारी अनूप नौटियाल ने इस अवसर पर एक व्याख्यान दिया जिससे उन्होंने 108 एम्बुलेंस सेवा के उत्तराखण्ड में स्थापना से अब तक के विकास व भविष्य की योजनाओं के साथ ही विभिन्न विभागों के साथ किए समन्वय के बारे में बताया। उन्होंने अपने अनुभवों के आधार पर उन क्षेत्रों के बारे में बताया जहां के मरीजों की जान मोबाइल नेटवर्क न होने के कारण चिकित्सा सुविधा न पहुंचने की वजह से जोखिम में रहती है। श्री नौटियाल ने कहा कि यूकोष्ठ तथा विज्ञान प्रसार की सहायता से हेम रेडियो सम्पर्क साधने का माध्यम बने ताकि सभी मरीज या घायल संदेश भेजकर काल सेंटर की सहायता से एम्बुलेंस को बुलाकर चिकित्सकीय मदद व प्राथमिक चिकित्सा प्राप्त कर सकें।



# A Low Energy APRS-IS Client-Server Infrastructure Implementation using Raspberry Pi

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**Abstract** – Radio communication has great history of innovations. A hobby which helped in pioneering many innovations in radio communications that we are using today is radio amateurism. Hams are radio amateur hobbyists, which use radio communication to communicate, research, and explore new radio technologies and applications, such as Automatic Packet Reporting System (APRS), which is digital communications information channel for Ham radio. Among other purposes APRS is used to report and map position of any stationery or mobile object via radio. In this paper we presented a low cost APRS client-server infrastructure using Raspberry Pi, APRSdroid, and software defined radio (SDR).

## I. INTRODUCTION

Automatic Packet Reporting System (APRS) is real time radio amateur service able to transmit position reports, weather reports, messages between users which are processed and visualized. Position reports supported by APRS, or more precisely APRS Internet Service (APRS-

National Disaster Medical System [7]. In the 1990's there were no widely available digital and detailed geographical maps like today's google maps, and many maps have to be drawn manually. These maps were able to support smaller geographical areas compared with today's available mapping mechanisms which can span whole world. Today's technology allows usage of APRS-IS to transfer locally collected data, or local data collection point via TCP/IP using UDP, TCP, or HTTP directly to APRS-IS, or indirectly via RF and APRS Internet gateways [8] which is our choice since it eliminates need of operational GSM / GPRS or other network that would support TCP/IP communication between data collection point (GPS location data reporting using RF transceiver) and IGates [9] where IGate [9] is a gateway APRS station. IGate nodes are able to communicate in the same time with Internet and radio amateur nodes. The IGate's task is to allow packets to cross from the local RF network to the APRS-IS see Figure 1.



purposes is built which is ready to use. This opens research activities in designing and building different antennas because we have problems in reaching IGate server unit from client unit from specific distances.

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KENWOOD TM-D700  
Data Radio

My YAESU VX-8DR

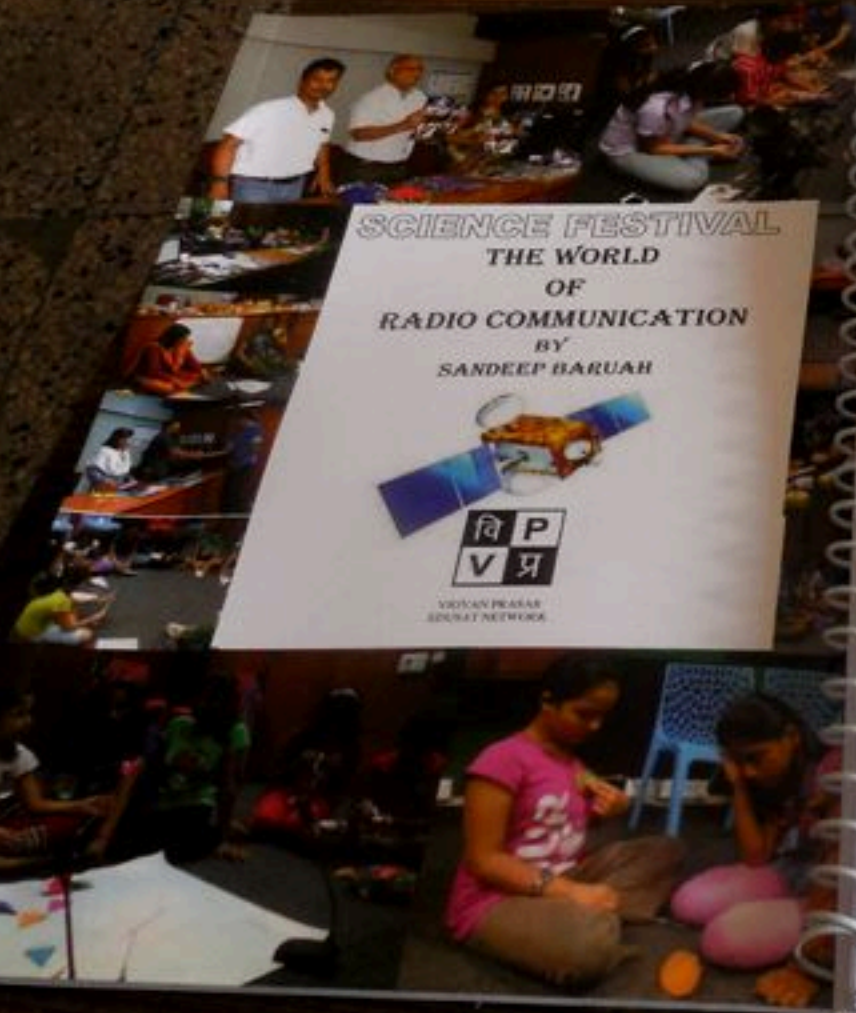


My Dyna [ France ]  
Morse Key  
[ earlier used by  
Boeing Pilots ]

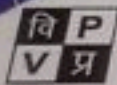
KENWOOD TS-590SG

My Half Wave Dipole  
Antenna





**SCIENCE FESTIVAL  
THE WORLD  
OF  
RADIO COMMUNICATION  
BY  
SANDEEP BARUAH**



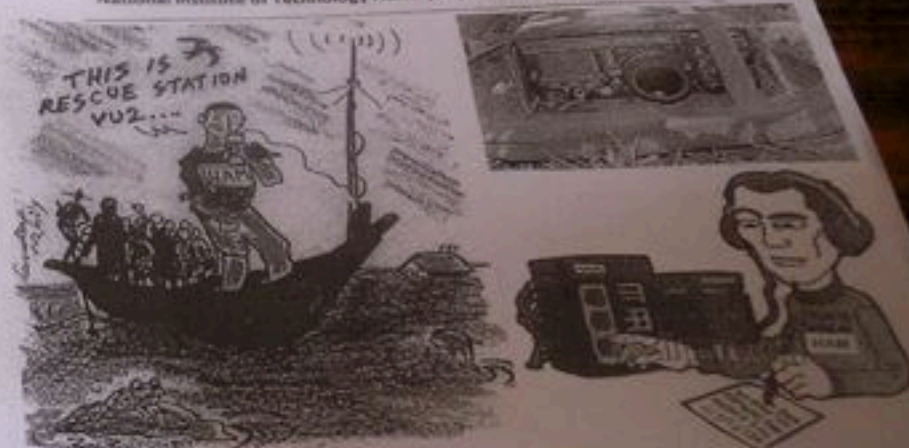
VIGYAN PRASAR  
SECURAT NETWORK

*Very Important must  
not be lost*



**HAM RADIO**  
*The Alternative Way of Communication*

Ham Radio Orientation Training Workshop  
April 2, 2016  
National Institute of Technology Hamirpur, Himachal Pradesh



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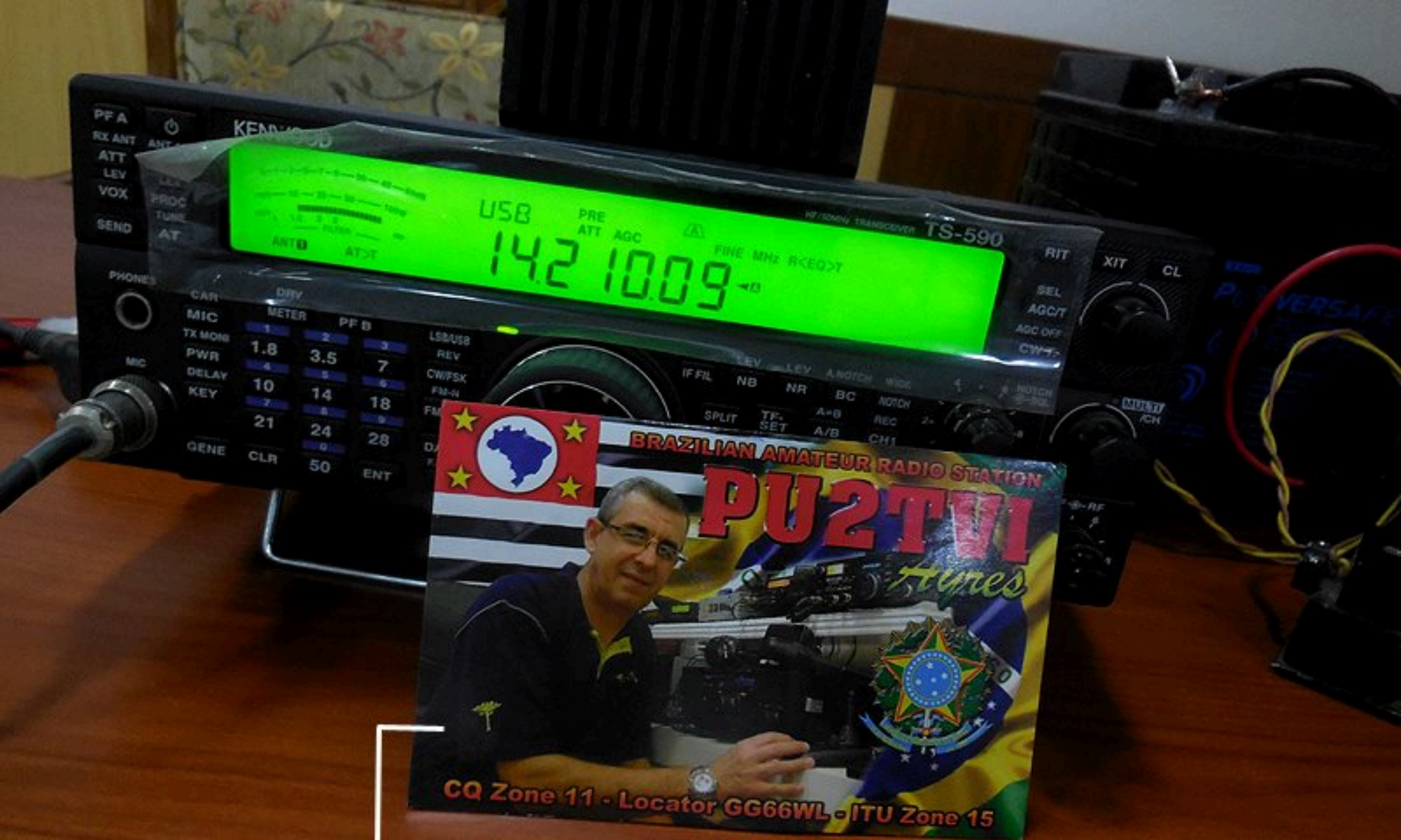








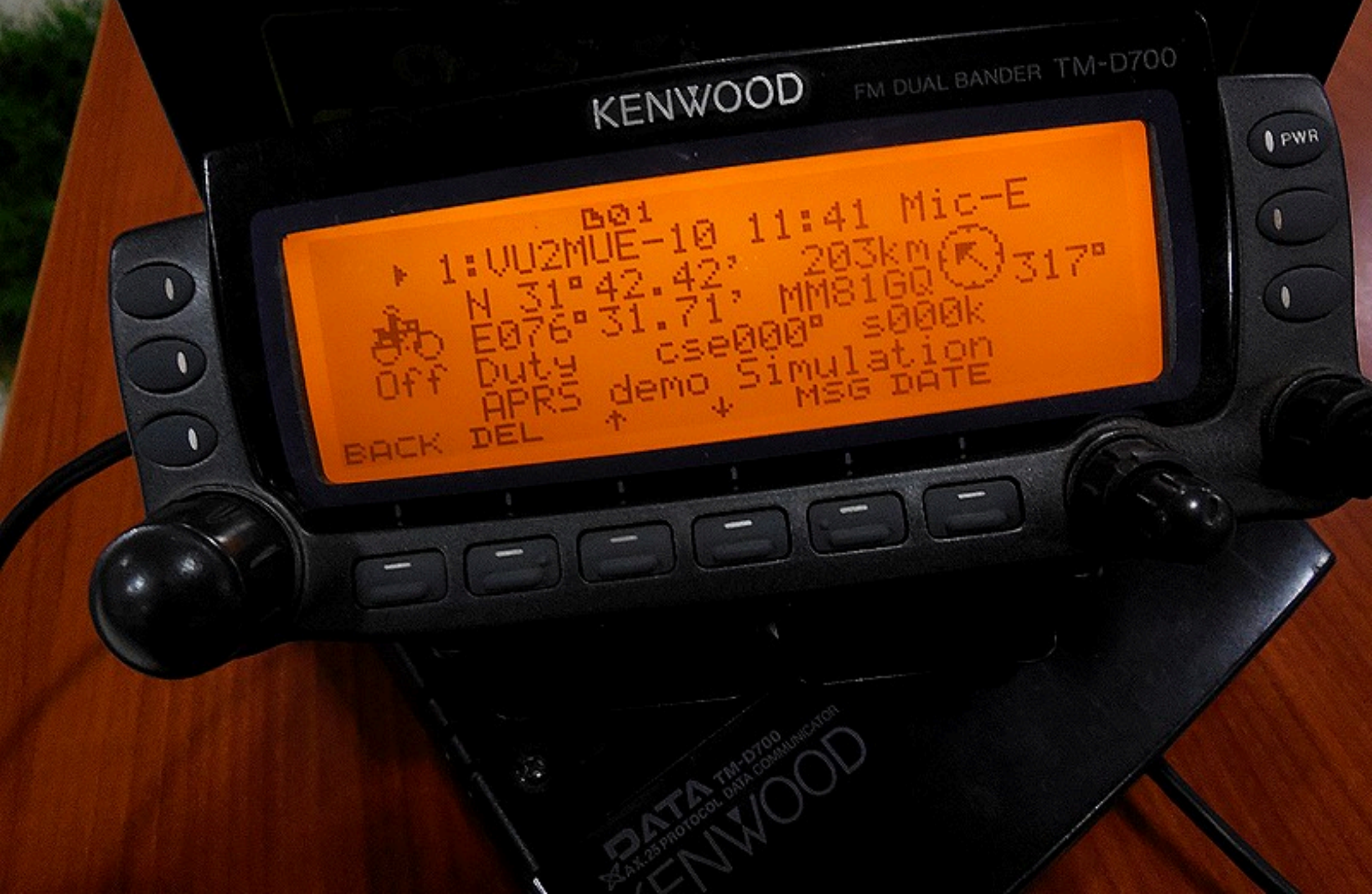




As we don't see the "Face" like Facebook, we print our face and it is not "Fake" like many Fake Faces in Facebook | QSL Card from Brazil !



# KENWOOD TM-D700 Data Radio/Digipeater









My Field Strength Meter  
[ Armed Forces Junk ]  
to sniff  
“Hidden  
Transmitters”?























# STATE LEVEL TRAINING PROGRAM ON HAM RADIO

Organised by  
SIKKIM STATE COUNCIL OF SCIENCE AND TECHNOLOGY

Supported by  
VIGYAN PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY,  
GOVERNMENT OF INDIA, NEW DELHI

DATE: 9<sup>th</sup> - 14<sup>th</sup> MAY 2017



















**FACE  
of the  
WEEK**

## Ham radio training for Sikkim concludes

SAMIRNUGO

**GANGTOK, May 14:** The weeklong State-level training on ham radio held at science centre at Marchak near Ranipool came to a close today.

The training programme was organized by Sikkim State Council of Science and Technology and supported by Vigyan Prasar, department of Science and Technology, government of India.

The training which started from May 9 had participants from across the districts comprising of Quick Response Team, members of SSDMA, media persons and NGOs members.

Sandeep Baruah, Scientist-E and the main resource person of the training, imparted technical knowledge on ham radio with the skill of theory and practical.

The valedictory function today had the State Science &



Participants using ham radio sets during the training. SE Pic

Technology principal secretary Anil Mainra as the chief guest accompanied by former secretary Rajesh Vema as a guest of honour.

Mainra urged the participants to make ham radio a hobby as it is useful during the time of emergency. He further appealed all the participants to clear its first

hurdle and possess the license after which the department will provide equipments.

The function also had a power point presentation by Vema, who is also a ham radio operator from Sikkim. He encouraged the participants to become ham operators and to help the people in the time of disasters.

Land Revenue joint secretary Ganesh Khanal urged the trainees to be more dedicated and keep the skill in track. He further stated that the department in consultation with the Science & Technology department will soon start the amateur radio (ham radio) in Sikkim for emergency situations like natural disasters.

The trainees will have to appear and qualify a written exam which would make them eligible for a ham license to be issued by the Union Communication & IT ministry.

Amateur radio (ham radio) is a popular hobby and service that brings people, electronics and communication together. People use ham radio to talk across town, around the world, or even into space, all without the internet or cell phones. Ham radio plays a key role in the time of emergency like floods, earthquake, landslides etc when telecommunication network fails to work.



**Eye Spec**  
Dr. Mushar  
Dr. Suprat  
Dr. Swarup

Neotia  
**NE**

Neotia Gen  
**ADVANCE**

Head &  
Brain &  
Paedia  
Cervica  
Vascula











# Ham radio training in Sikkim

## SE Report

**GANGTOK, March 9:** A six-day certification training-cum-workshop on Ham Radio started today at Sikkim Science Centre, Marchak. The training programme is being organized by Sikkim State Council of Science & Technology with support from Vigyan Prasar, Department of Science & Technology, Government of India.

The Quick Response Team under State Disaster Management department, teachers, media persons, NGOs and volunteers are undergoing the training programme which will cover in-depth Ham Radio studies, informs a press release.

During the workshop, the participants will also get to know the advance applications of Ham Radio such as packet radio and data transfer using PSK31.

The training programme will be followed by an examination to become certified HAM user which will be conducted by Union Ministry of Communication.

The inaugural session was

attended by Science & Technology principal secretary Anil Mainra as the chief guest.

While welcoming the resource persons and participants, Mainra explained the importance of alternative mode of communication during natural disaster and how it can save several lives if there are trained persons in remote areas to communicate with the help of such device.

He suggested all participants to be serious and take interest during the training so that the State's effort does not go waste.

Scientist Sandeep Baruah from Vigyan Prasar and former State Information Technology secretary Rajesh Verma are the resource persons.

During many of the past large scale disasters all over the world, Amateur Radio Service (Ham Radio) has proved its efficacy in quick dissemination of disaster management information like search and rescue, relief work, tracking of missing person, real-time plotting of vehicles and personnel involved in disaster management and transmission of weather telemetry data.



STATE LEVEL TRAINING PROGRAM



SIKKIM STATE COUNCIL OF SCIENCE AND TECHNOLOGY

Supported by

VIGYAN PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY,  
GOVERNMENT OF INDIA, NEW DELHI

VENUE: SIKKIM SCIENCE CENTRE

DATE: 9<sup>th</sup> - 14<sup>th</sup> MAY 2016













## Ham radio training in Sikkim

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## Gangtok resident s Mansarovar Yatra

**Staff Reporter**

**GANGTOK, May 9:** An assistant engineer working with the State Rural Development department has been selected to undertake the Kailash Mansarovar Yatra through Nathu La route this year.

Toyanath Sharma (47) from Gangtok would visit Kailash Mansarovar through Nathu La in the fifth batch of the annual pilgrimage. His name was selected after the computerised draw of lots conducted by the Union External Affairs (MEA) ministry in New Delhi on May 6.

Sharma said he is happy but not excited. "I am happy that my name has been listed out in the draw but I am not excited as I have to go through medical test," he told SIKKIM EXPRESS.

A total of 2,482 complete applications, comprising 1948 males and 656 females, were registered for the draw this year. Among them, names of 1,430 applicants have been selected to undertake the yatra starting from June 12.

State Tourism department officials said they are however



**Toyanath**

unaware of Sikkimese shortlisted for

In 2013 pilgrims from selected. The opening of motorable route through Nathu La in Sikkim. The following a Indian and Chinese in 2014. This pilgrims are on Nathu La route.

The MEA yatra during each year through routes - the Uttarakhand Pass in Sikkim open to eligible holding valid who wish to Mansarovar purposes.





SIXTH LEVEL SCIENCE PROGRAM ON HAM RADIO  
SIKKIM STATE COUNCIL OF SCIENCE AND TECHNOLOGY  
Supported by  
PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY,  
GOVERNMENT OF INDIA, NEW DELHI  
HAM SCIENCE CENTRE  
08th - 14th MAY 2014





# STATE LEVEL TRAINING PROGRAM ON HAM RADIO



Organised by  
SIKKIM STATE COUNCIL OF SCIENCE AND TECHNOLOGY

Supported by  
VIGYAN PRASAR, DEPARTMENT OF SCIENCE & TECHNOLOGY,  
GOVERNMENT OF INDIA, NEW DELHI

VENUE: SIKKIM SCIENCE CENTRE

DATE: 9<sup>th</sup> - 14<sup>th</sup> MAY

























































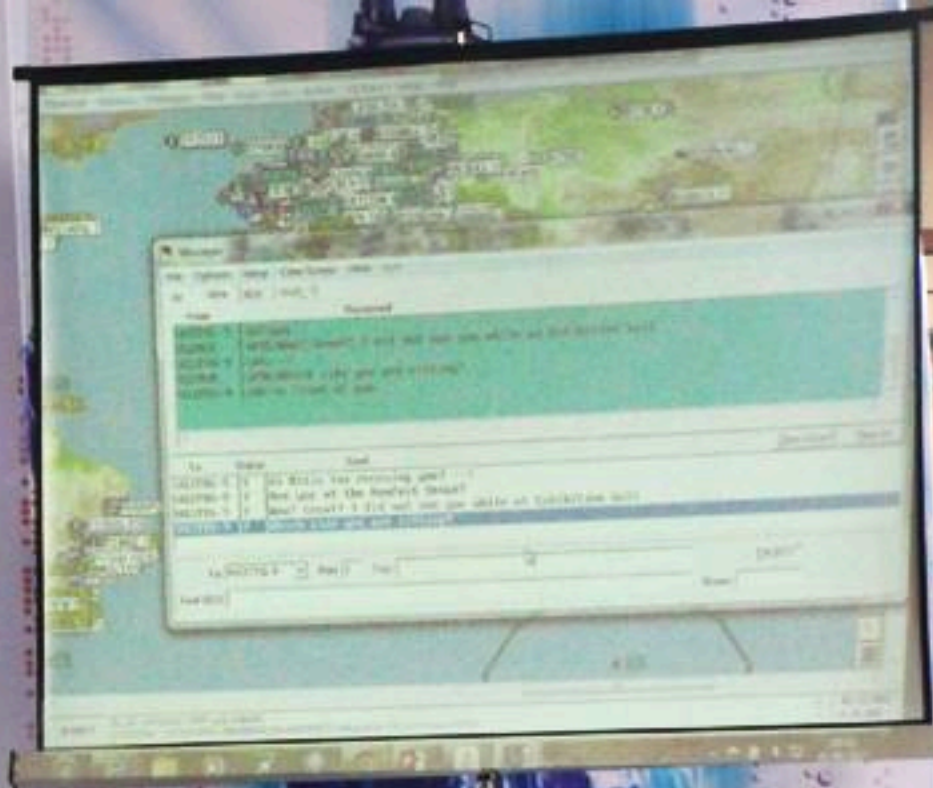




# INDIA 2013

## LOR

## TEM















**Miroslav Skoric, YT7MPB  
Serbia**



**IP67 [ Dust Proof  
Water Proof ]  
Pelican Case**



**13.8 Volt  
[ International  
Standard for  
Amateur  
Radio  
Equipment ]**

**23 Ah  
[Ampere hour]**



**12 Volt Fully  
Charged  
High capacity  
Preferably 47 Ah  
SMF Battery inside**

**Inside it is  
YAESU FT-857D  
HF/VHF/UHF/50 MHz  
9 year old radio & a  
Morse Key**





# DREAM

## 2047

June 2002

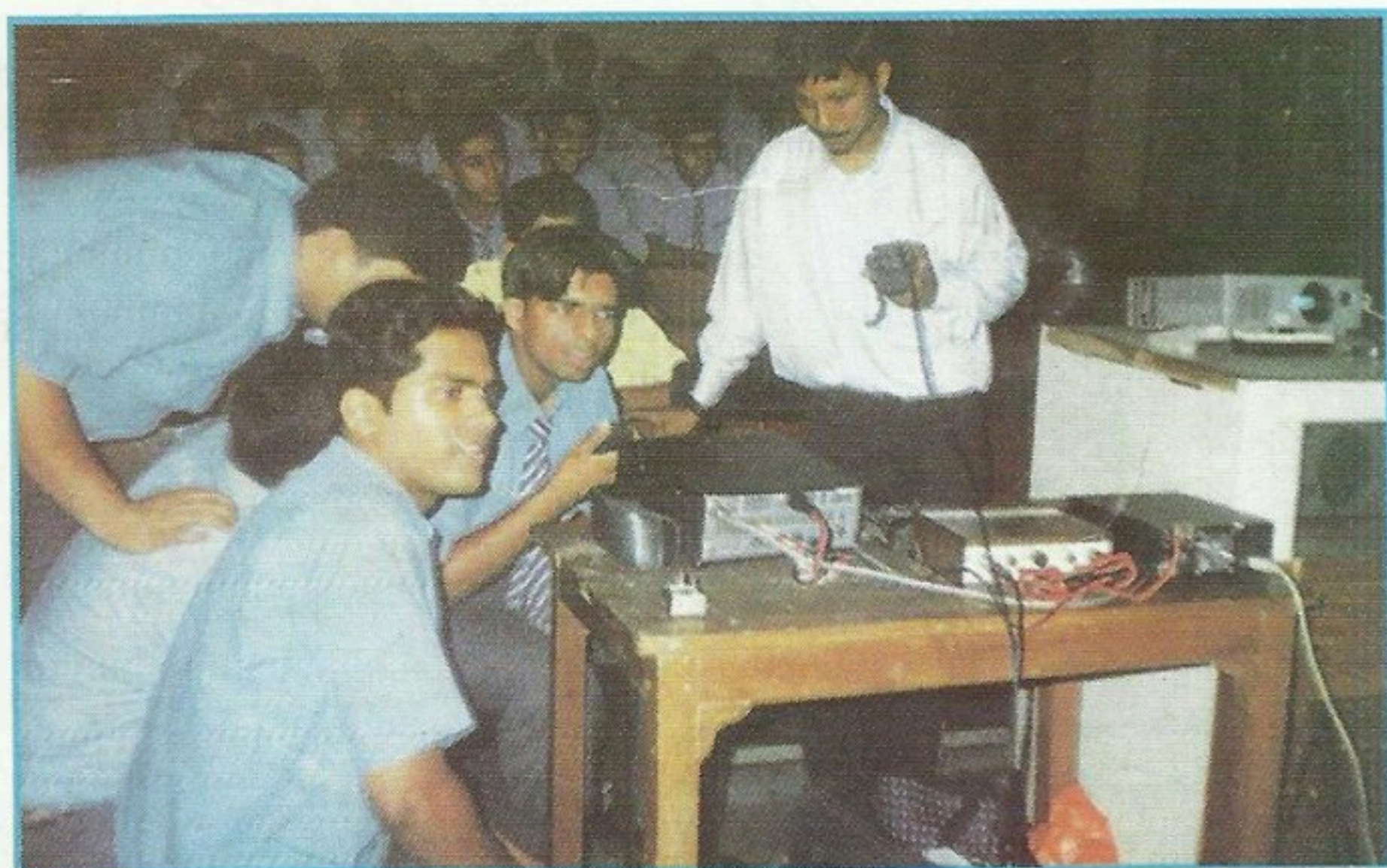
Vol. 4

No. 9

## VP News

### AMATEUR RADIO (HAM RADIO) PROMOTIONAL ACTIVITIES

Vigyan Prasar has been continuing with its effort to popularize the hobby of ham radio amongst school children. On April 24, 2002, a lecture-cum-demonstration programme on ham radio was organized by Vigyan Prasar for the students of Springdale School, Dhaulakuan, New Delhi. It was an exciting experience for the young students to listen to and at the same time talk to an unknown person located hundreds of kilometers away through short wave radio. Shri Dattatry Deogaonkar, VU2DSI, a ham radio operator located in Ahmednagar, Maharashtra responded to the call given from VU2NCT club station of Vigyan Prasar and interacted with the children. Students from sixteen different schools in and around Delhi got an opportunity to attend another such programme organized on May 3, 2002, on the occasion of a science fair 'Indradhanush-2002'. The science fair was organized by SEARCH (Society for Science & Environment, Awareness, Research, Communication & Heritage). The students interacted with Shri Dattatry for almost an hour exchanging varieties of information through the amateur radio club station VU2NCT/MUE. The demonstration programme was assisted by Shri Sushil Dhingra, VU2LFA (New Delhi) by way of on-the-air contact with VU2NCT/MUE. Students from Mount St. Mary's School, Delhi Cantt. attended another awareness programme organized by Vigyan Prasar on May 8, 2002. Shri Muktesh Chander, VU2HJZ, an IPS official with the Delhi Police, also participated in the programme. The utility of amateur radio from the disaster mitigation point of view was explained by him to the students. Mrs. Bharthi Prasad, VU2RBI (New Delhi) and Shri Sushil Dhingra, VU2LFA (New Delhi) assisted the programme by establishing radio contact with the demonstration station VU2NCT/MUE.



Ham Radio demonstration to Mount St. Mary's School, Delhi Cantt



Ham Radio demonstration at "Indradhanush-2002".

## Inside

### EDITORIAL

✉ Charles Robert Darwin



✉ "AIDS is more than a medical problem"

✉ The Universal Physical Constants and the Cluster Hypothesis



✉ Agharkar Research Institute, Pune



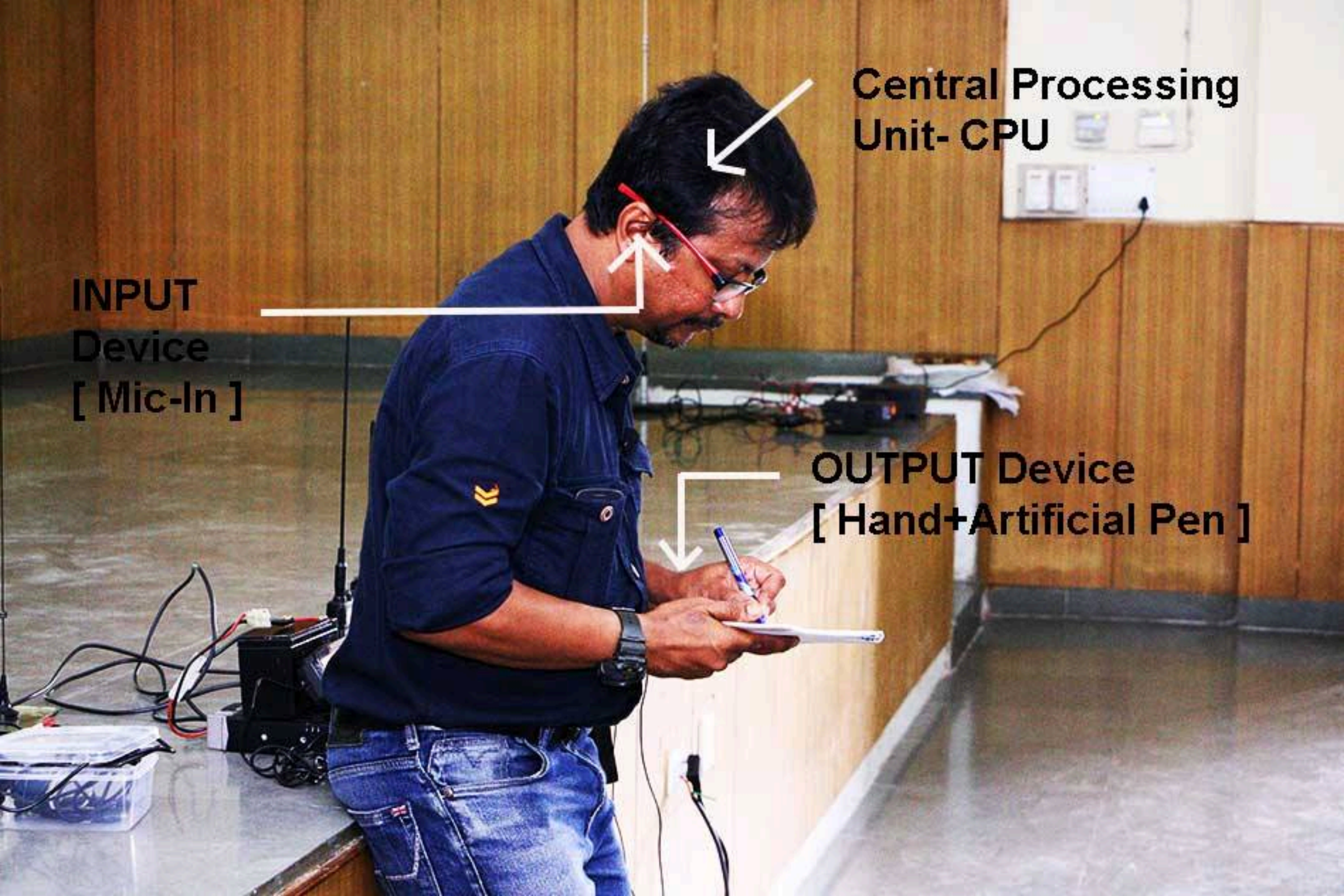
✉ Richard Sonnenfeldt



✉ Recent Developments in Science & Technology

...think scientifically, act scientifically ... think scientifically, act scientifically ... think scientifically, act...





**Central Processing  
Unit- CPU**

**INPUT  
Device  
[ Mic-In ]**

**OUTPUT Device  
[ Hand+Artificial Pen ]**





# DREAM

## 2047

July 2006

Vol. 8

No. 10

Price: Rs. 5.00

## VP News

### State Level Ham Radio Training Programme in Uttaranchal

A state level ham radio training programme was organized by Vigyan Prasar at Dehra Dun jointly with the Uttaranchal State Council for Science & Technology (U-COST) and National Service Scheme (NSS), Uttaranchal, from June 7 to 29, 2006.

Uttaranchal being in a highly seismic zone, this effort was initiated to impart radio communication skills to the NSS volunteers and to set up a ham radio communication network for emergency communication. Fifty-two Programme Officers and volunteers of the National Service Scheme (NSS) from thirteen districts of Uttaranchal were trained for the Amateur Radio Licensing examination.



NSS volunteers listening to ham radio transmissions during a demonstration programme

### Workshop on Innovative Experiments in Physics

A two day workshop on 'Innovative Experiments in Physics' was held at Army Public School, Lucknow on 30 and 31 May, 2006. The workshop was inaugurated by Prof. V.D. Gupta, former Vice Chancellor of Allahabad University. Ms K. Dasgupta Misra, Vigyan Prasar welcomed the participants and made a presentation on Vigyan Prasar and its activities. The workshop was attended by more than 35 teachers of physics from various districts of U.P. The participants were from Varanasi, Allahabad, Lucknow, Kanpur, Gorakhpur, Jaunpur, Barabanki, and so on. After the inauguration, the demonstration of innovative experiments in Physics was shown by Shri Mukesh Roy of IIT, Kanpur. More than twenty five innovative experiments in Physics were demonstrated to the participants. Teachers appreciated the workshop and

Contd. on page...21

## Inside

EDITORIAL p.39

Marie-Sophie Germain p.38

Towards Nutrition Security p.33

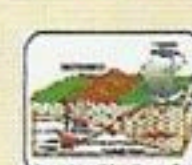
How many planets in the sky? (part-II) p.30

Simple Exercises for Your Back p.28

Earthquake Tips-2 p.25

Recent Developments in S &amp; T p.23

Sky Map for August 2006 p.22



Contd. on page...21



Teachers participating in the workshop

... think scientifically, act scientifically... think scientifically, act scientifically... think scientifically, act...



ABES Engineering College, Ghaziabad

NAAC Accredited & Approved Branches (CSE, ECE, & ME)



ACM ABES Chapter International Workshop

on  
"Amateur Communications &  
Computational Environments"

September 2016

by:  
Mr. A. K. Singh







Demo at Guwahati Medical College: Covered in the  
STAR NEWS









Antenna Installation at a demo site





















44th Jamboree On The Air (JOTA) for Kendriya Vidyalaya  
Air Force School, Tughlakabad







# HAM operator helps families connect with Tsunami victims

**RAMESH  
RAMACHANDRAN**  
TRIBUNE NEWS SERVICE

NEW DELHI, DECEMBER 28

An amateur radio enthusiast based in the Capital has succeeded where most government agencies have failed. Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair, the capital of Andaman and Nicobar Islands, and has helped relay messages between the people stranded on the island and their families back home.

Sitting at his terminal Tuesday afternoon, Baruah told The Tribune that he has received 10 "calls" over the past 48 hours. "I have received e-mails and SMSes from several places at home and abroad ... Bangalore, Ranchi, Pune and Thailand .... I have relayed all their messages to this team of HAM operators stationed at Port Blair and forwarded the replies from them to the families wherever they are," he said. One such distraught family is from New Delhi.

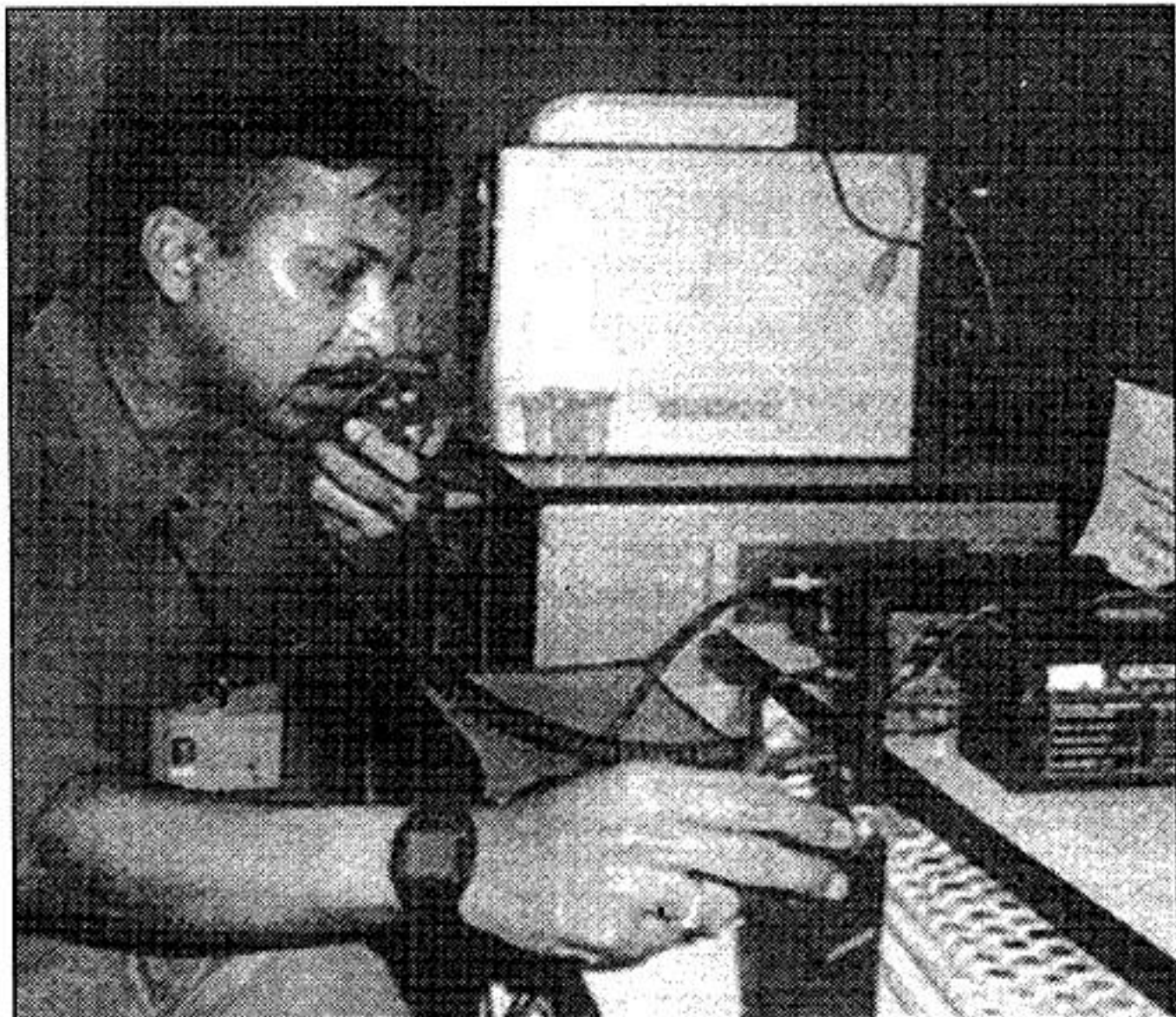
Dr Karan Singh Chauhan, who teaches in a college here, was holidaying with his two sons and a daughter on the island when the Tsunami hit the shore. It had only been a few days from the time they reached Port Blair. "Fortunately," Dr Chauhan recalled, "There were these people staying on the fifth floor of the hotel where we were put up ... they had this equipment (HAM), so we asked them if they could relay the infor-

mation of our well-being to people back home."

Within hours, Sandeep Baruah was on the telephone informing Dr Chauhan's domestic help of their whereabouts. Dr Chauhan and his family, who returned to the Capital last night, have not spoken with Baruah yet but he is all praise for him and the amateur radio operators on the island for coming to his help in their hour of need. Baruah, meanwhile, has no regrets. He has no time for that for there are other calls to be attended to, he says as a distant station crackles at his terminal.

Like Dr Chauhan, Mrs Cesar Maia from Bangkok, Thailand, has established contact with Baruah. She wants to if her husband is safe and sound on the island. "I have not received any news about her husband but I am trying ... the audio quality today is poor, so I might have to wait longer to hear from my counterparts stationed on the island," says Baruah, who is happy being Good Samaritan for people he has come to know only in the past few days.

Meanwhile, Dr Chauhan is still to recover from his harrowing experience on the island. "Buildings were literally swaying from side to side, the hotel where we were staying was damaged ... there were cracks in the walls, the sea was violent and washed away anything and everything that came in its way ... even the boundary wall of a college nearby was swept away ... all of us spent the first night outside," he recalls before he, his children and one other family flew to Kolkata on way to Delhi.



Sandeep Baruah, a licensed HAM operator who works in a government organisation by day and pursues his hobby from home at night, has managed to establish communication links with Port Blair.

## Delhiites chip in with relief

TRIBUNE NEWS SERVICE

NEW DELHI, DECEMBER 28

The leader of Opposition in Delhi Legislative Assembly, Prof. Jagdish Mukhi, has expressed grief over the widespread death and destruction caused by the Tsunami in southern India and many countries in the Indian Ocean.

A meeting of the BJP legislature party was called in this regard and it observed a two-minute silence as a mark of respect to the deceased. The BJP legislators have also

decided to donate their one-month salary for the victims.

Meanwhile, the NDMC Vice Chairperson, Tajdar Babar, has moved a resolution for contributing Rs. one crore as financial assistance from the municipal funds. This is in addition to the token contribution from NDMC employees for the quake victims of Tamil Nadu.

The Municipal Corporation of Delhi has also decided to pay Rs. 4 crore to the Prime Minister's Relief fund. This fund is being raised by way of

contributions from MCD councilors who are contributing their one month's stipend and employees who are contributing one day's salary. The contribution of the latter adds up to Rs 3 crore.

According to the mayor, the MCD has set up collection centres in all 12 zones under the supervision of Deputy Commissioner to collect relief materials. The material collected would be handed over to the Ministry of Home Affairs for transportation to the affected areas.









Uttam Girl's Public School, Ghaziabad



nidm  
Towards a Disaster Free India  
Disaster Situations"  
NIDM  
MANAGEMENT  
of India  
shan

















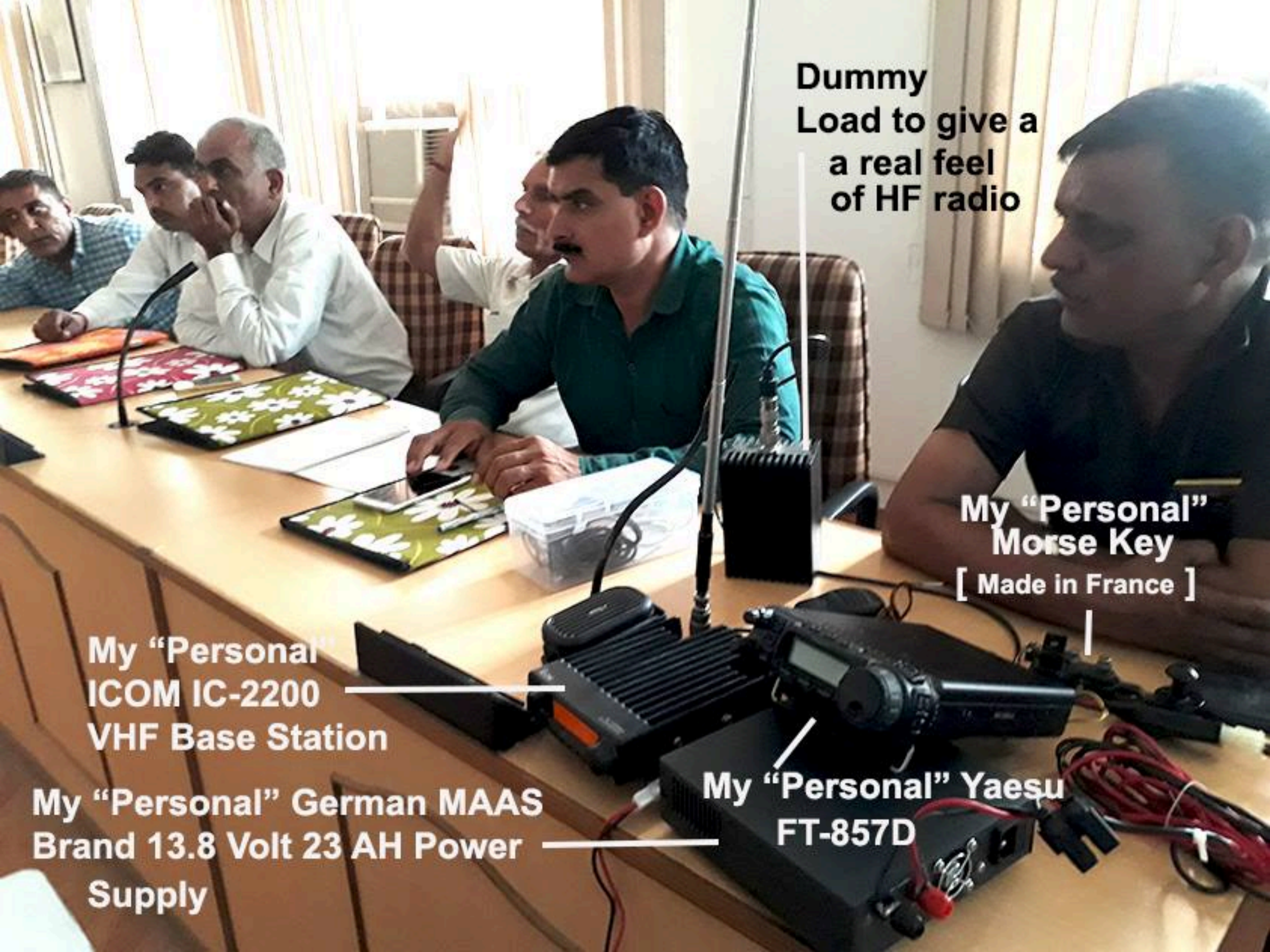
**Dummy  
Load to give a  
a real feel  
of HF radio**

**My "Personal"  
Morse Key  
[ Made in France ]**

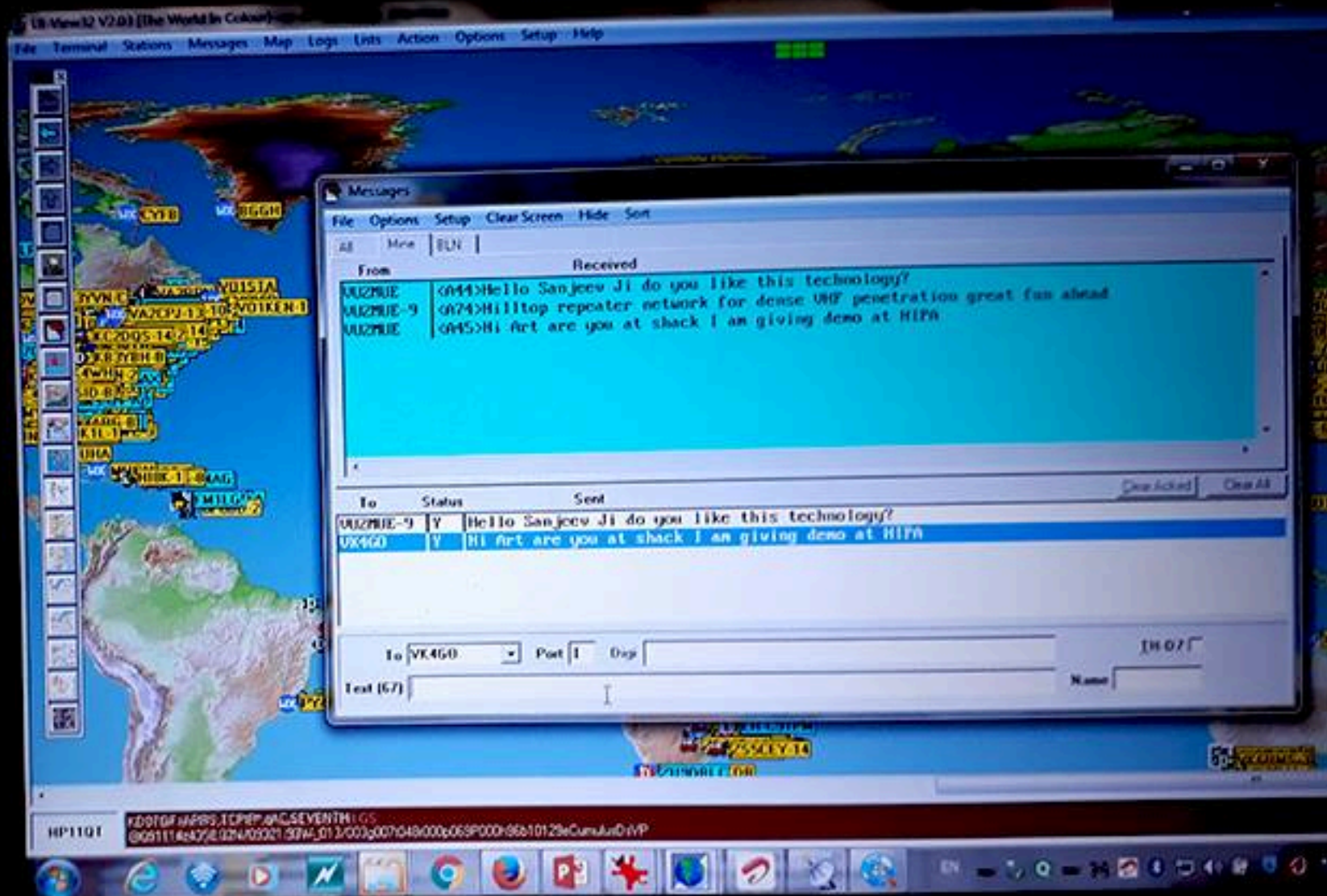
**My "Personal"  
ICOM IC-2200  
VHF Base Station**

**My "Personal" German MAAS  
Brand 13.8 Volt 23 AH Power  
Supply**

**My "Personal" Yaesu  
FT-857D**



















Messages

File Options Setup Clear Screen Hide Sort

All Mine BLN

From

Received

U02MUE

<A44>Hello Sanjeev Ji do you like this technology?

U02MUE-9

<A74>Hilltop repeater network for dense VHF penetration great fun ahead

U02MUE

<A45>Hi Art are you at shack I am giving demo at HIPA

To

Status

Sent

U02MUE-9

Y

Hello Sanjeev Ji do you like this technology?

VK4G0

Y

Hi Art are you at shack I am giving demo at HIPA

Clear Acked

Clear All

To

VK4G0

Port

I

Digi

IN-D7

Text (67)

Name

HP1101

KD0TGF:APRS:TERMINAL:AG:SEVENTH:GS:  
 @091114:4358.32N/03321.93W\_013/003p007:048:000p069P000h96b10129eCumulusD:VP















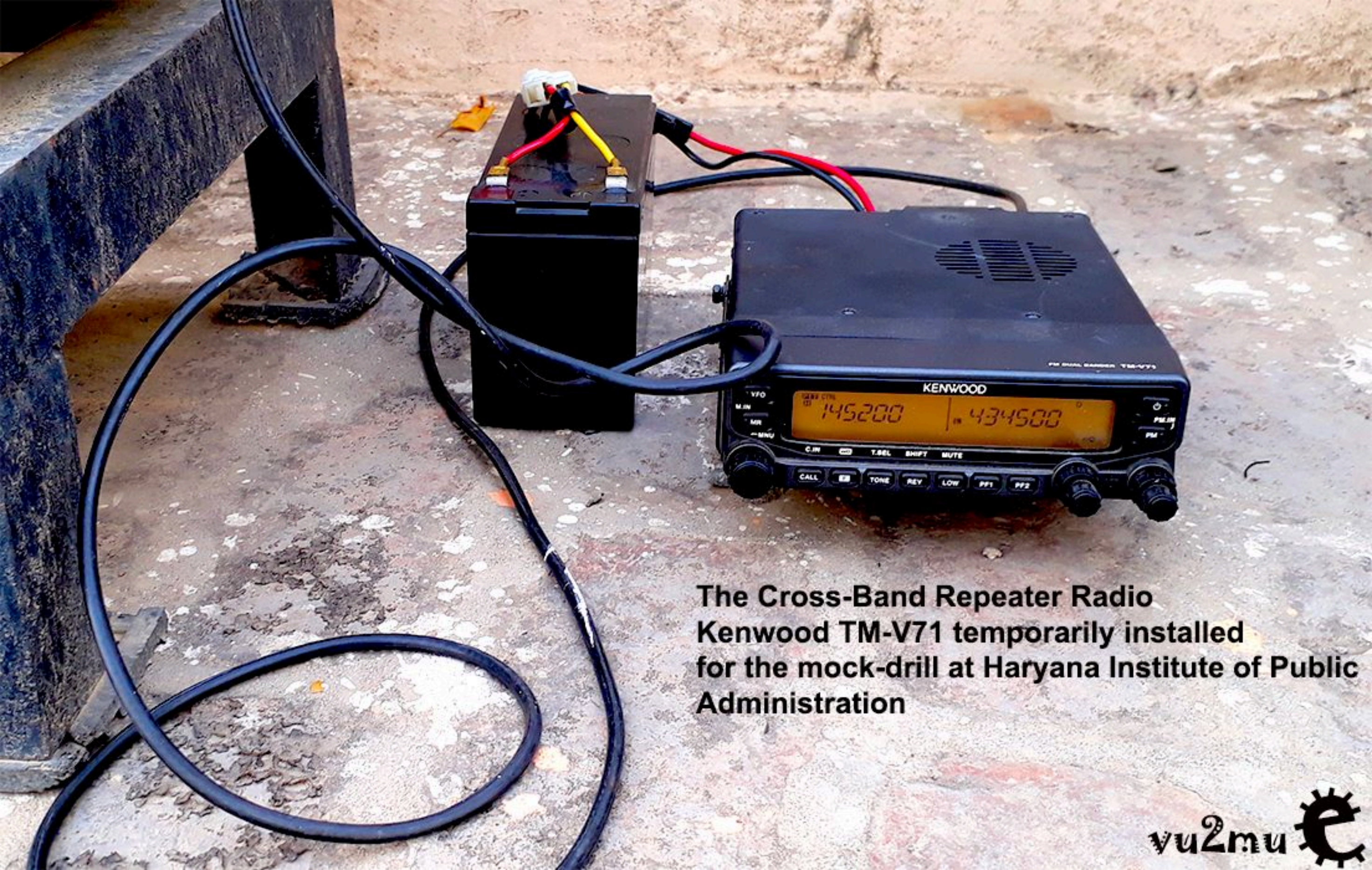
My "Personal"  
Yaesu VX-8DR  
APRS Radio

My "Pelican Case"  
gifted by  
Sudip VU3SFF  
to carry my "Personal"  
Yaesu [Japan]  
FT-857D+Morse Key+13.8 Volt DC Power Supply









**The Cross-Band Repeater Radio  
Kenwood TM-V71 temporarily installed  
for the mock-drill at Haryana Institute of Public  
Administration**





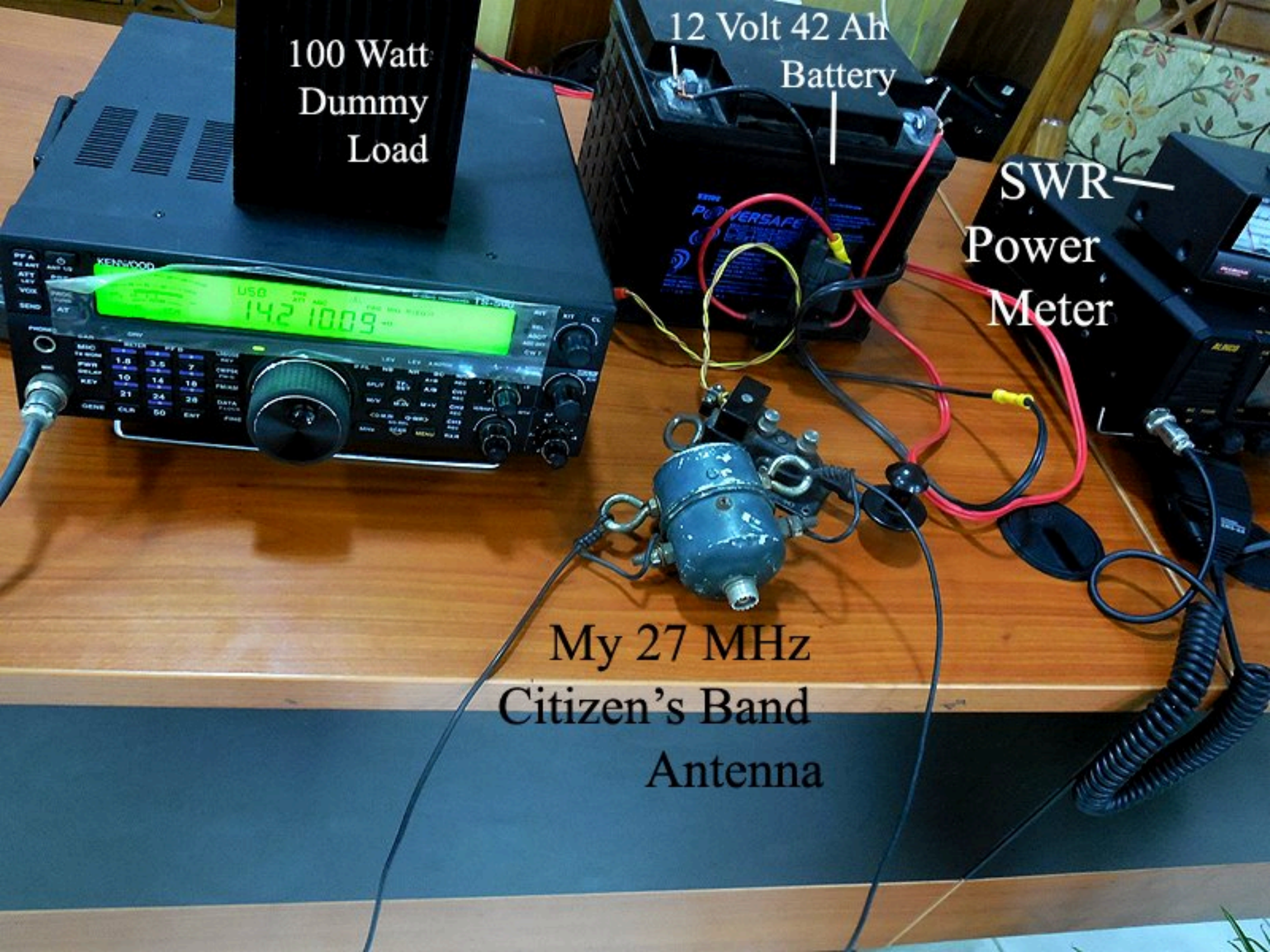


100 Watt  
Dummy  
Load

12 Volt 42 Ah  
Battery

SWR—  
Power  
Meter

My 27 MHz  
Citizen's Band  
Antenna











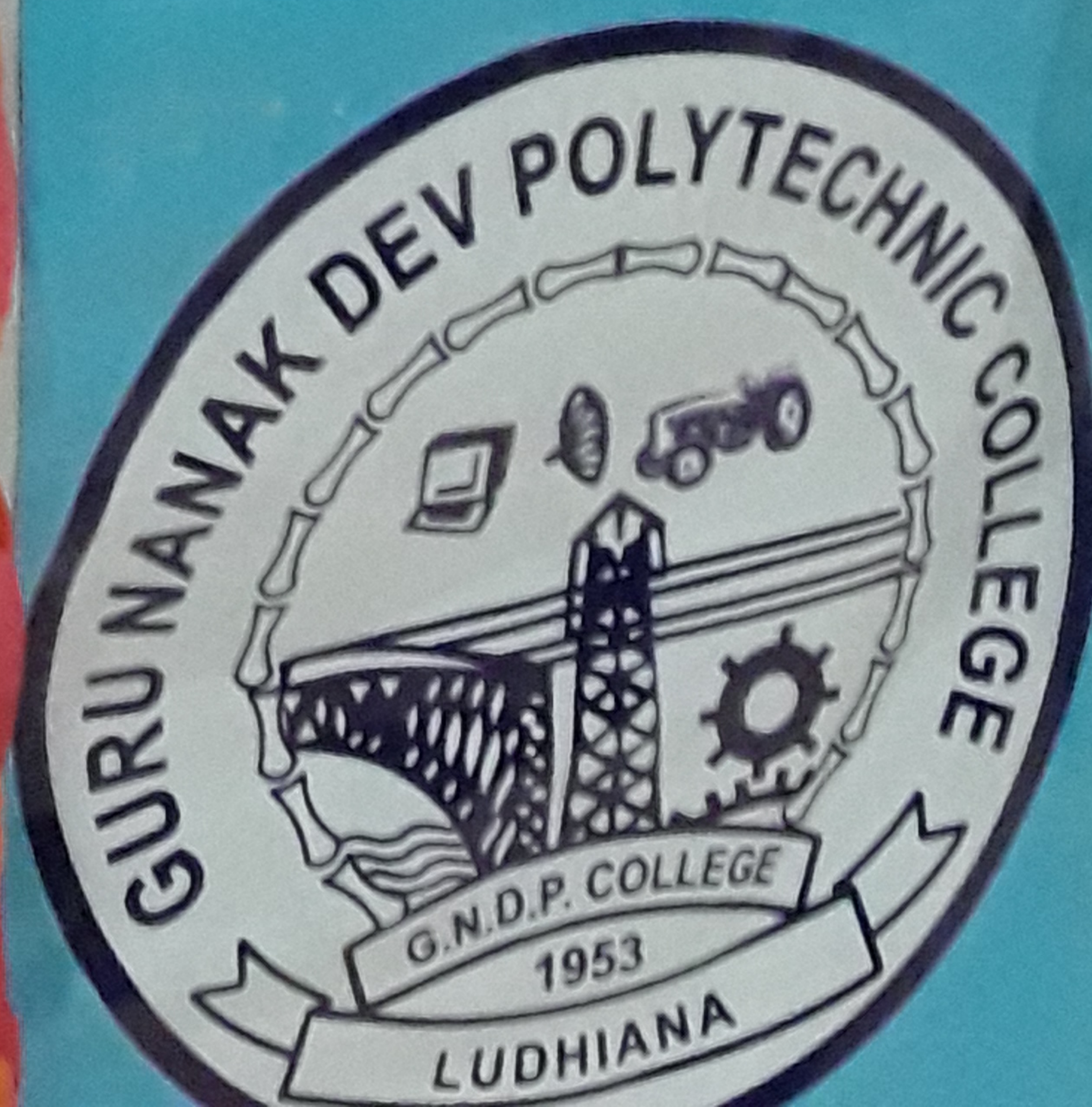




































































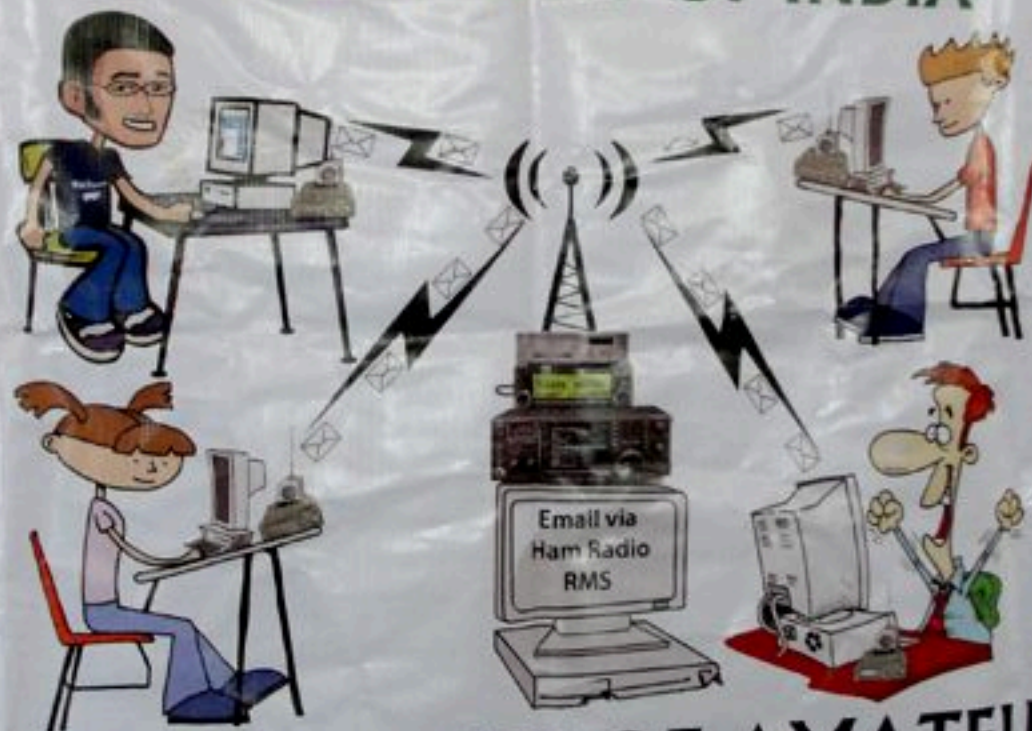






# AMATEUR RADIO ADVANCED DIGITAL COMMUNICATION NETWORK

Supported By  
DEPARTMENT OF INFORMATION TECHNOLOGY  
GOVERNMENT OF INDIA



## NATIONAL INSTITUTE OF AMATEUR RADIO

Raj Bhavan Road, Hyderabad, India

Email: [niarindia@hotmail.com](mailto:niarindia@hotmail.com), [vu2nro@gmail.com](mailto:vu2nro@gmail.com), URL: [www.niar.org](http://www.niar.org),  
Telefax: +91-40-23310287, Tel: 65167388





Ham Radio Digital Communication demo  
Vignan Techno SPAS School  
Huzurnagar, Nalgonda.

वि P  
व प्र

27th April, 2013

Jointly organized by  
Vigyan Prasas [VP], DST, Govt of India  
&  
National Institute of Amateur Radio  
Hyderabad

AMATEUR RADIO  
ADVANCED DIGITAL COMMUNICATION NETWORK

Supported By  
DEPARTMENT OF INFORMATION TECHNOLOGY  
GOVERNMENT OF INDIA

NATIONAL INSTITUTE OF AMATEUR RADIO  
Raj Bhavan Road, Hyderabad, India































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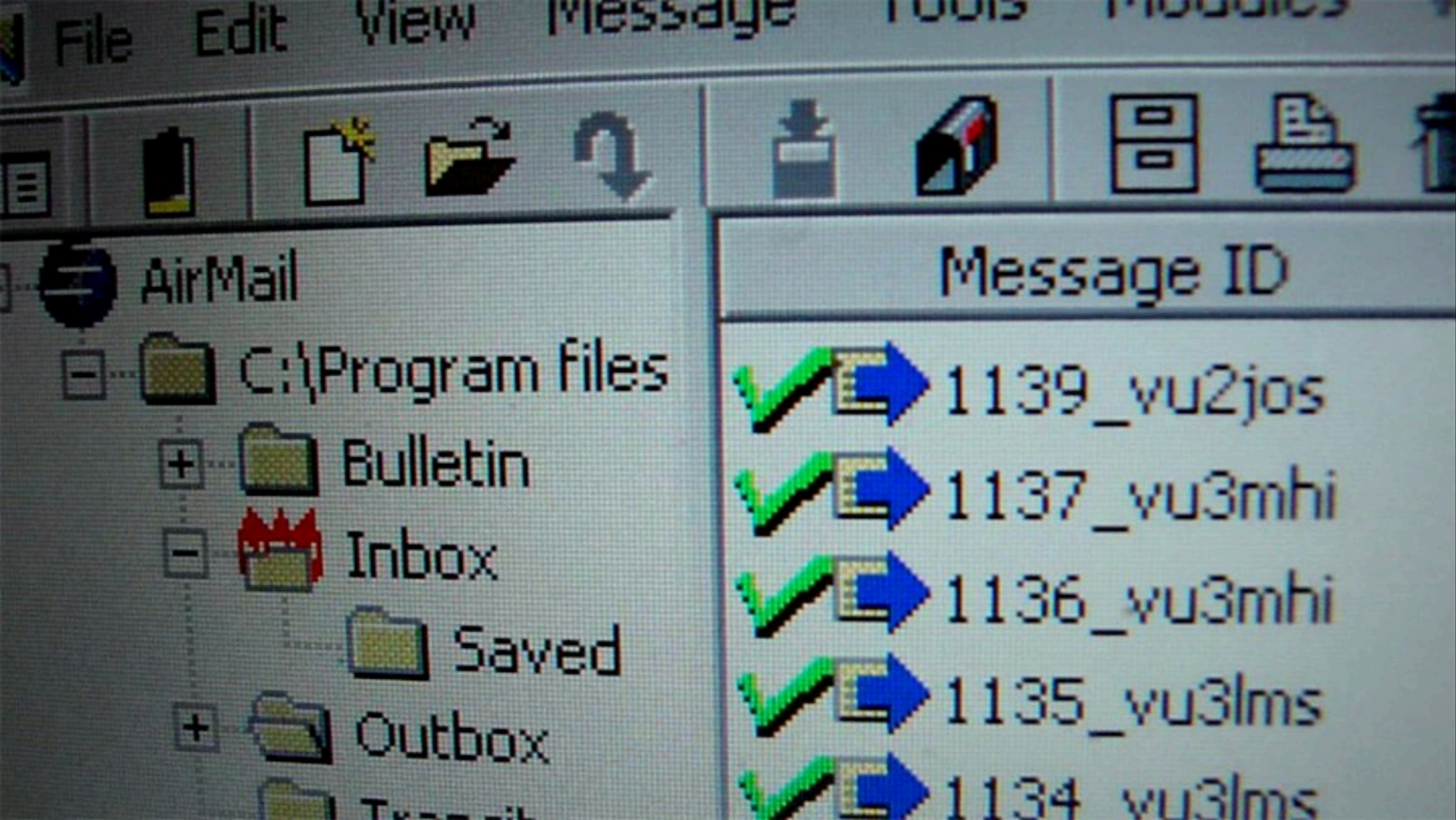
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NEWTRON





















VU3JOY

VU2MUE

VU2IVV







## SCHEDULE:

**1400 hrs : Assemble in the  
Presentation Hall**

**14.15 Hrs : Keynote**

**14.30 Hrs : Formal Inauguration**

**14.45 Hrs : Project Overview**

**15.30 Hrs : Satellite Tracking  
Demo**

**1600 Hrs : A session on Wireless  
Communication  
by VU2MUE,  
DST-Govt. of India**

**16.30 Hrs : HF,VHF,UHF Live  
Transmission Demo**

## CONTACT US:

ace.gs.team@gmail.com

acegroundstation.blogspot.com

## MEMBERS:

ANUJ TIWARI	9664209976
ANIRUDDHA KHADYE	9029001386
DIVYA ACHARYA	9172401360
NIRALI KHANDAR	9821291532
NIKHIL JOSHI	9869273473
SAURABH SANGHAI	9969474464
SWARNKAMAL SINGH PARMAR	9892702912
VIRAL SHAH	9619207586



ATHARVA COLLEGE OF  
ENGINEERING'S



Atharva Satellite Ground-Station  
presents

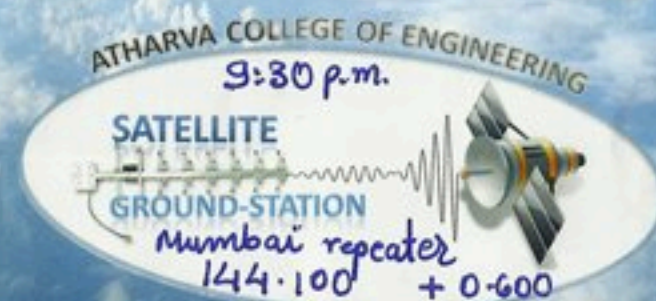
## WIRELESS TECHNOLOGY AND SATELLITE COMMUNICATION SYMPOSIUM

on

15th March, 2012

at

4th Floor Presentation Hall, Phase 3.  
Atharva Educational Complex.



Matheran Repeater

145.000 + 0.600

We Innovate Communication...  
We Communicate Innovation !

















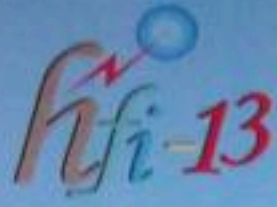








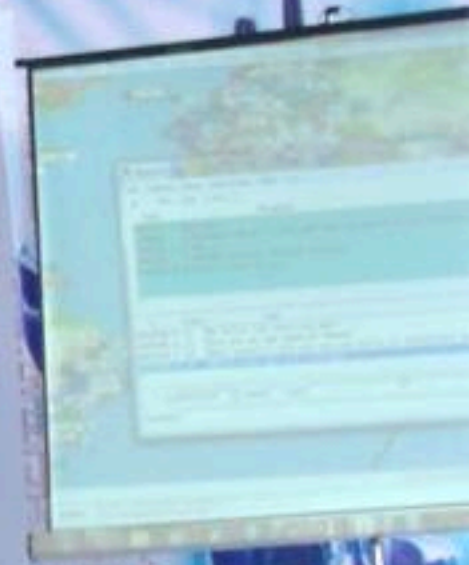




# **HAMFEST INDIA 2013**

## **GWALIOR**

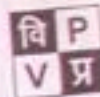
### **21-22 SEPTEMBER**







Ham Radio Digital Communication  
Vignan Techno SPAES School  
Huzurnagar, Haligonda.



27th April, 2013



Jointly organized by  
Vigyan Prasar [VP], DST, Govt of  
&  
National Institute of Amateur R.  
Hyderabad



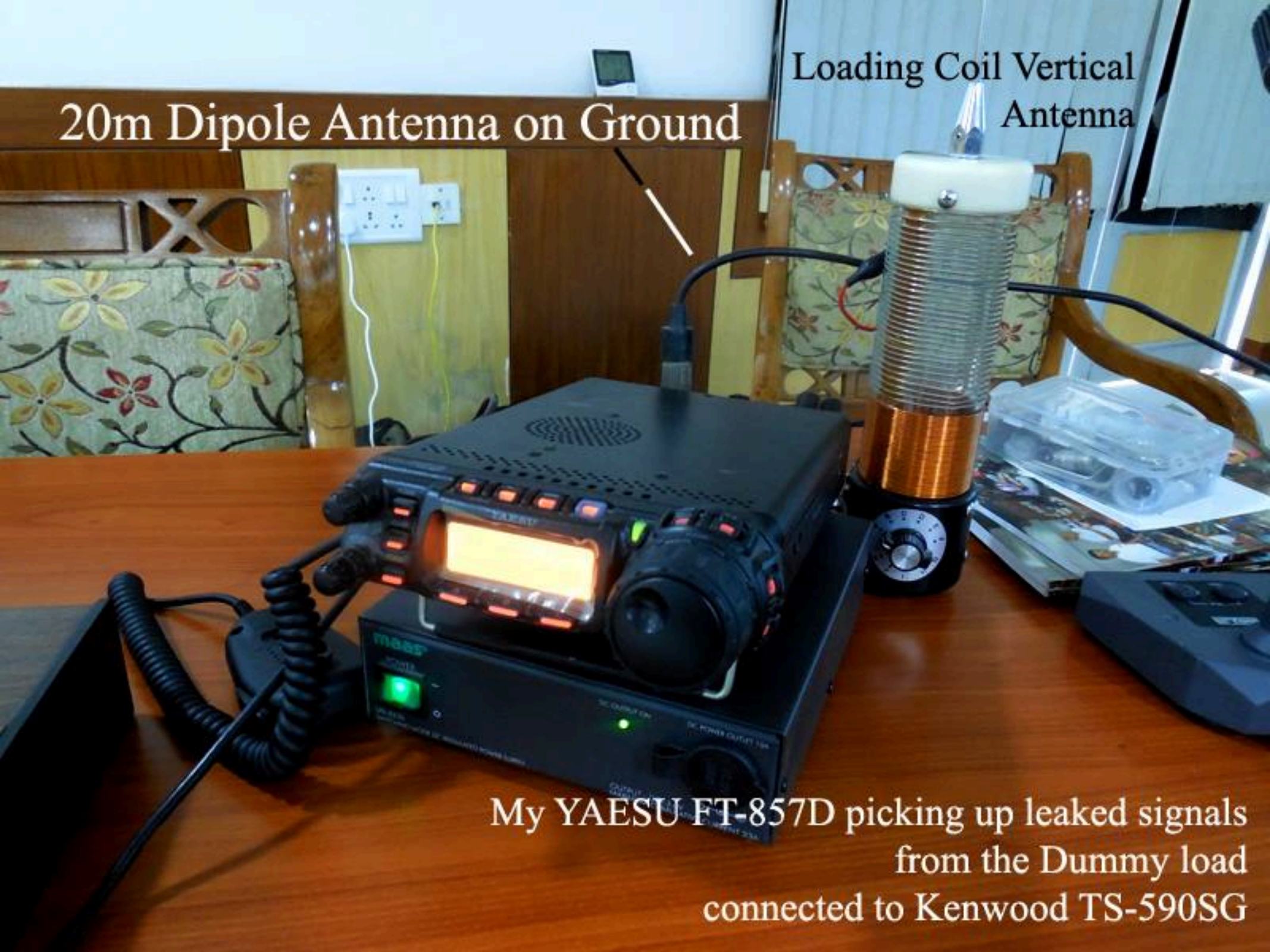




20m Dipole Antenna on Ground

Loading Coil Vertical  
Antenna

My YAESU FT-857D picking up leaked signals  
from the Dummy load  
connected to Kenwood TS-590SG













COMMISSION  
PRO  
KARUNA IN  
Ph : 044 - 252

ಕರ್ನಾಟಕ ಸರ್ಕಾರ  
2015-06-05  
2015

























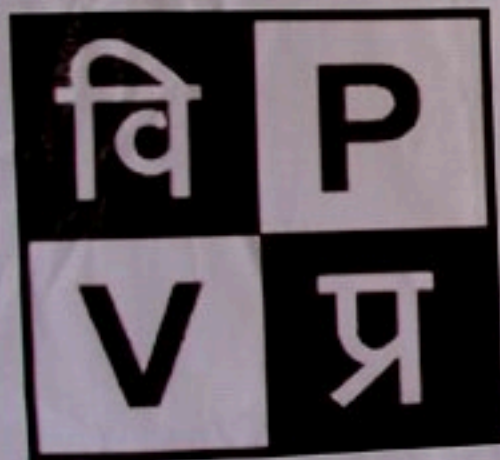








**Ham Radio Digital Communication demo  
Vignan Techno SPAES School  
Huzurnagar, Nalgonda.**



**27th April, 2013**



**Jointly organized by  
Vigyan Prasar [VP], DST, Govt of India  
&  
National Institute of Amateur Radio  
Hyderabad**





VU2NC

THE WORLD IN Y

(HAM RAD

A student from Guruharkishan Public School





















वि P  
व प्र

Department of Science & Technology, Govt. of India  
National Council of Science & Technology Communication (NCSTC) - An Prasar  
Lectureship Scheme  
[Scientists - Students Interaction Scheme]







Science & Technology of India  
Technology Communication (STC) & Vigyan Pr  
Lecture Series  
Students Interac







Department of Science & Technology  
for Science & Technology Communication Series  
[Scientists & Technicians Interact]  
Vidya Prasar







Department of Science & Technology, India  
Council for Science & Technology Communication (Vigyan Prasthiti)  
Lecture Series  
[Scientists - Students Interaction Programme]





























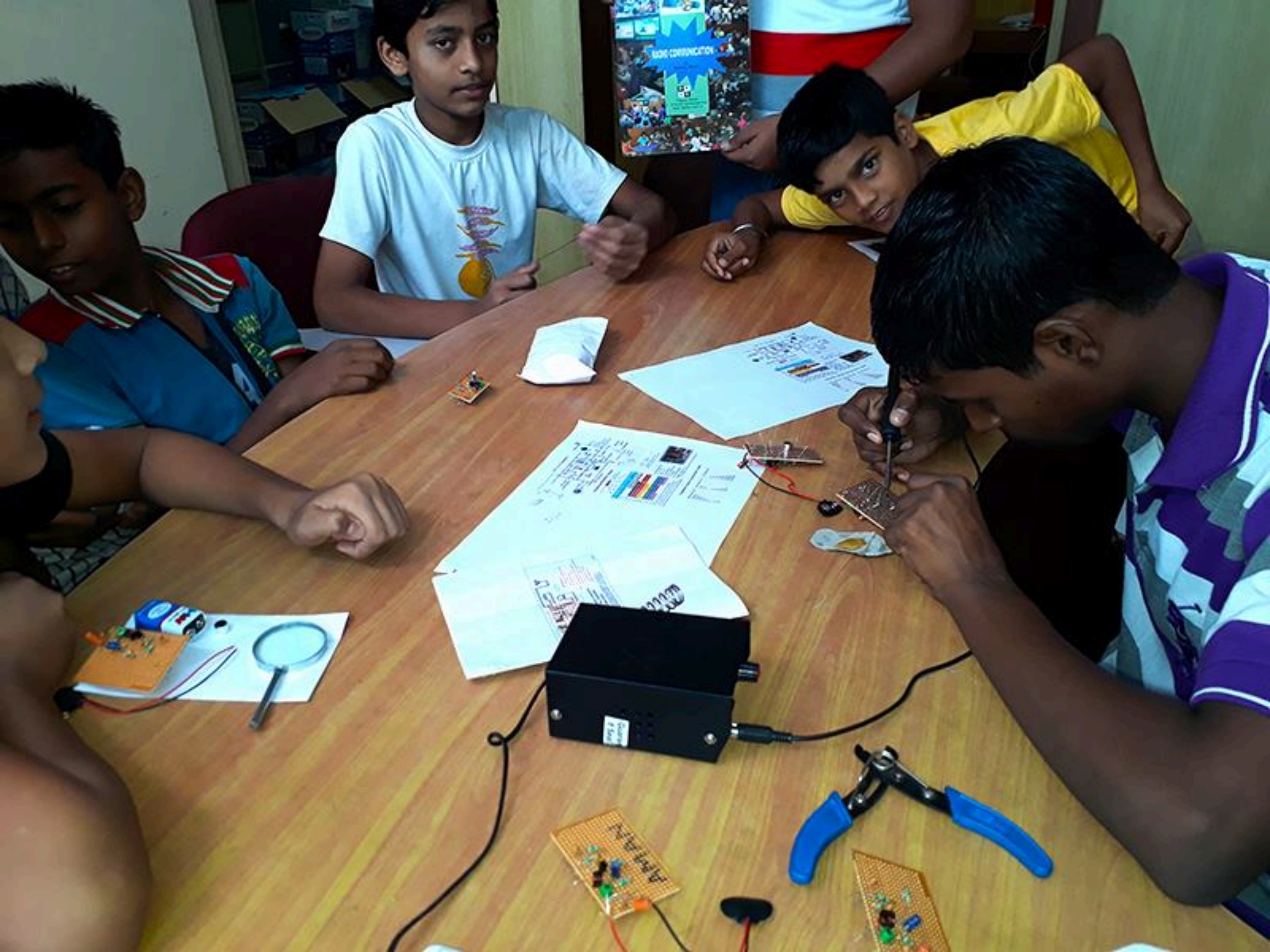




Department of Science & Technology  
National Council for Science & Technology Communication  
Lecture Series  
(Scientists - Students Interaction Program)









WORKSHOP  
OF HAM RADIO  
Our Experts: Mr. Satnam Singh Birdi  
29th September 2017  
Venue: Cassibary Club







Our Experts:  
**Mr. Sandeep Baruah**

VU2MUE, SCIENTIST-E, VIGYAN PRASAR

**Mr. Satnam Singh Birdi**

SVUJ PUNJAB AMATEUR RADIO SOCIETY

Date: 28th-29th September 2017









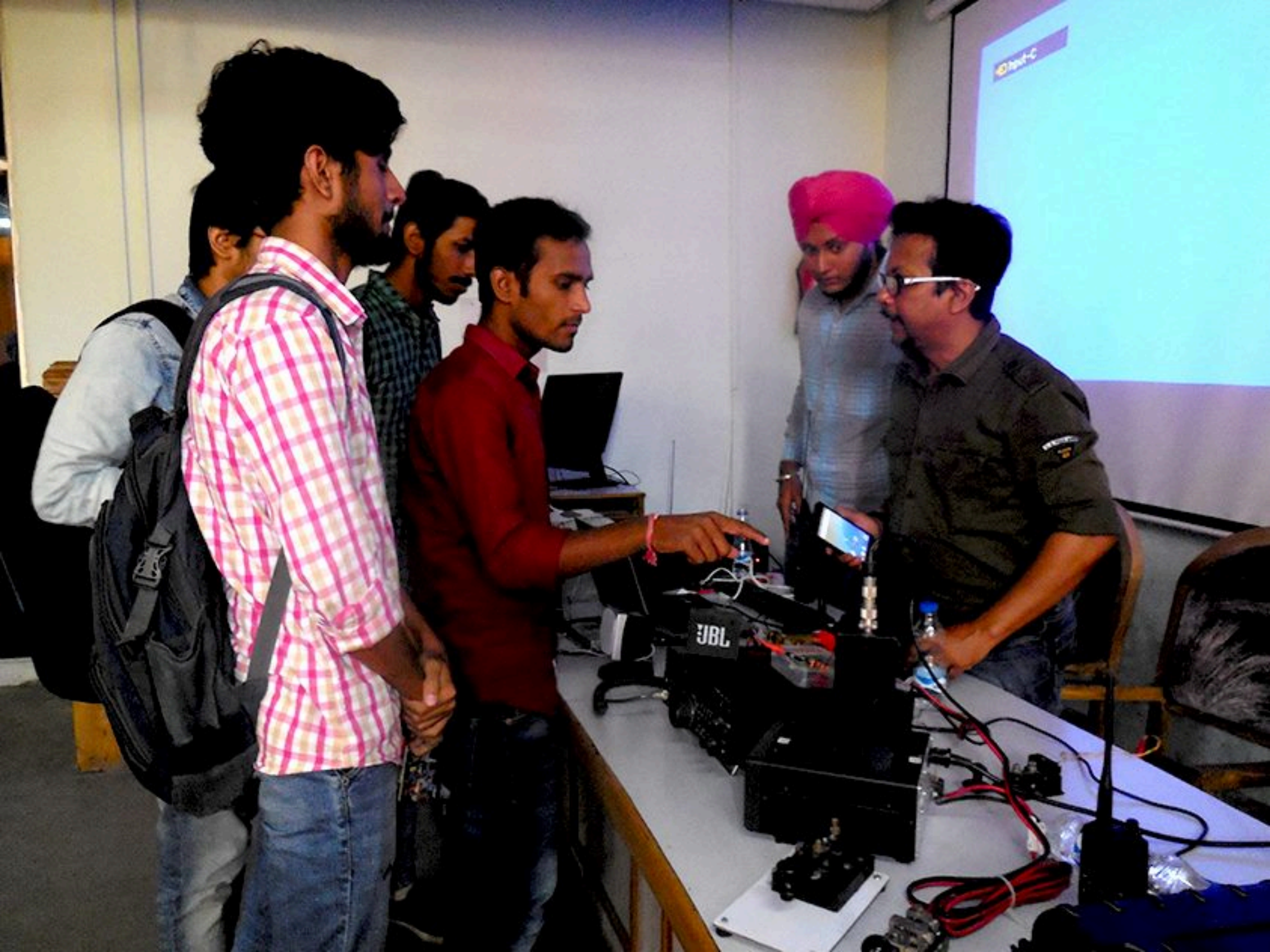


















WORKSHOP  
OF HAM RADIO  
Mr. Satnam Singh Birdi  
29th September 2017





## हैम रेडियो की मदद

भी कर सकते हैं Digital Addressable केबल टीवी उपभो





REDMI NOTE 5 PRO  
MI DUAL CAMERA

2019/1/12 17:00





REDMI NOTE 5 PRO  
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2019/1/12 16:00

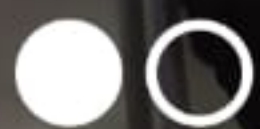




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# WORKSHOP

on  
HAM RADIO TRAINING

Venue:- Radio and Electronics Section

 **NATIONAL BAL BHAVAN**  
Kotla Road, New Delhi-2

BE ECONOMY  
REDUCE EEE. BILLS  
LONG LIVE YOUR  
APPLIANCES

Use CFLs Whenever Possible  
Iron Clothes once in a week

Avoid the use of IRON, MIXIE  
GRINDER, PUMP etc.  
8-10 pm to 10.00 pm  
(During peak load hours)

"ZERO" watt is actually 15 watts  
A unit of energy saved = 2 Units  
of energy produced

KNOW & LEARN THINGS  
REMEMBER





### CONSERVATION OF ENERGY

KNOW AND OBSERVE

- BE NATURE FRIENDLY
- BE QUALITY CONSCIOUS
- PREVENTION IS BETTER THAN CURE
- BE ECONOMIC & SAVE
- REDUCE ELX. BILLS
- LONG LIVE YOUR APPLIANCES
- KNOW & LEARN THINGS
- REMEMBER

WHAT TO DO

- Use Maximum Natural Light
- Use ISI Marked Appliances
- Check Wiring & Insulation periodically. Do the job by Approved Licensed Electricians & Contractors
- Use CFLs whenever possible
- Iron Clothes once in a week
- Avoid the use of IRON, MIXIE GRINDER, PUMP etc. 8-6:00 pm to 10:00 pm (During peak load hours)
- "ZERO" watt is actually 15 watts
- A unit of energy saved = 2 Units of energy produced

### GENERATION OF POWER

WIND

TIDAL

### GENERATION OF POWER

LIGHTNING

GEOTHERMAL

### GENERATION OF POWER

SOLAR

NUCLEAR

### GENERATION OF POWER

HYDRO

THERMAL

## WORKSHOP

on

### HAM RADIO TRAINING

Venue:- Radio and Electronics Section

**NATIONAL BAL BHAVAN**  
Kotla Road, New Delhi-2

### INNOVATIVE DOMESTIC WIRING





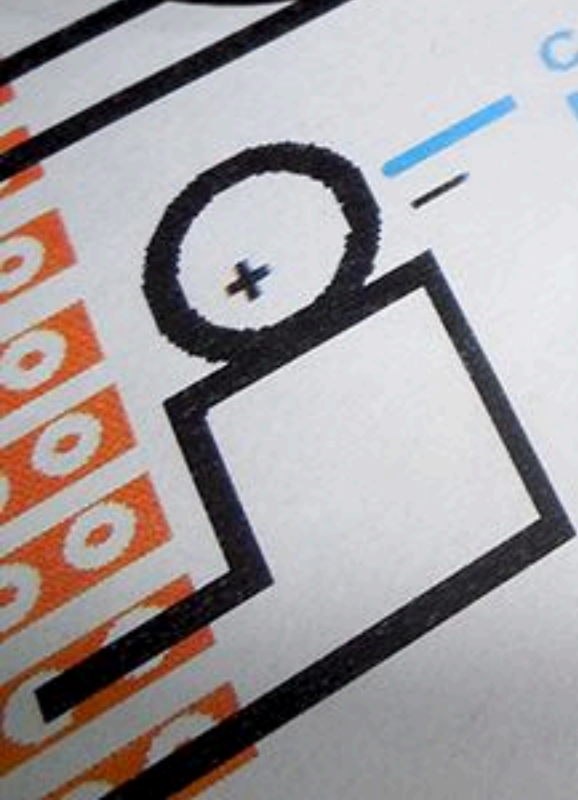
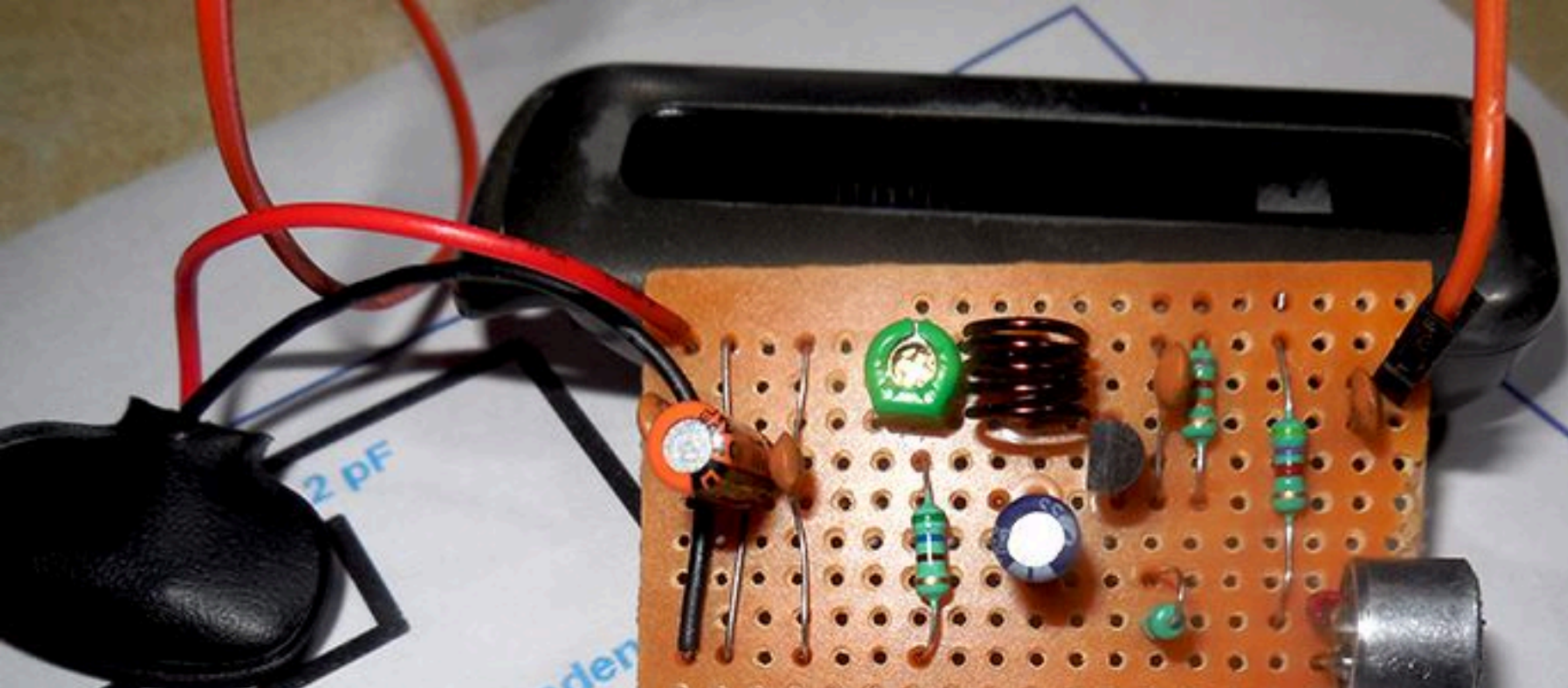
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**WARNING**  
It is illegal  
to use high power in the  
Broadcast Band  
You need to take a  
Base an Amateur Radio Station  
Operator's (Ham Radio Licence)  
Licence to transmit in  
frequencies



parents are of different races. **half-crown** (or **half a crown**) a former British coin equal to two shillings and sixpence (12½p). **half-dozen** (or **half a dozen**) a group of six. **half-hearted** without enthusiasm or energy. **half-hour** (or **half an hour**) a period of thirty minutes. **half-life** the time taken for the radioactivity of a substance to fall to half its original value. **half-measures** actions or policies that are not forceful or decisive enough. **half-nelson** a hold in wrestling in which you pass one arm under your opponent's arm from behind while applying your other hand to their neck. **half-term** *Brit.* a short holiday halfway through a school term. **half-timbered** having walls with a timber frame and a brick or plaster filling. **half-time** (in sport) a short gap between two halves of a match. **not half** 1 not nearly. 2 *Brit. informal* to an extreme degree.

**halfback** *noun* a player in a ball game whose position is between the forwards and fullbacks.

**halfpenny** or **ha'penny** /hay-pni/ *noun* (plural **halfpennies** or **halfpence** /hay-p'ns/) a former British coin equal to half an old penny.

**halfway** *adverb & adjective* 1 at or to a point equal in distance between two others. 2 to some extent.

**halfwit** *noun* informal a stupid person. **half-witted** *adjective*.

**halibut** *noun* (plural **halibut**) a large flat sea fish used for food.

**halitosis** /hali-toh-sis/ *noun* bad-smelling breath.

**hall** *noun* 1 (also **hallway**) a room or space inside a front door, or between a number of rooms. 2 a large room for meetings, concerts, etc. 3 (also **hall of residence**) *Brit.* a university building in which students live. 4 *Brit.* a large country house.

**halallelujah** /hal-li-loo-yuh/ or **alleluia** /al-li-loo-yuh/ *exclamation* God be praised.

**hallmark** *noun* 1 an official mark stamped on objects made of pure

gold, silver, or platinum. 2 a distinctive feature. **• verb** stamp an object with a hallmark.

**hallo** → **HELLO**.

**hallowed** /hal-lohd/ *adjective*

1 made holy. 2 very honoured and respected.

**Halloween** or **Hallowe'en** *noun* the night of 31 October, the evening before All Saints' Day.

**hallucinate** *verb* (hallucinates, hallucinating, hallucinated) see something which is not actually there. **• hallucination** *noun*

**hallucinatory** *adjective*.

**hallucinogen** /huh-loo-si-nuh-juhn/ *noun* a drug causing hallucinations. **• hallucinogenic** *adjective*.

**halo** /hay-loh/ *noun* (plural **haloes** or **halos**) 1 (in a painting) a circle of light surrounding the head of a holy person. 2 a circle of light round the sun or moon.

**halogen** /hal-uh-juhn/ *noun* any of a group of elements including fluorine, chlorine, bromine, and iodine.

**halt** *verb* come or bring to a sudden stop. **• noun** 1 a stopping of movement or activity. 2 *Brit. & minor* stopping place on a railway line.

**halt** *adjective* old use lame.

**halter** *noun* a rope or strap placed around the head of an animal and used to lead it. **• halter neck** a style of woman's top that is fastened behind the neck, leaving the shoulders, upper back, and arms bare.

**halting** *adjective* slow and hesitant.

**halve** *verb* (halves, halving, halved) 1 divide into two halves. 2 reduce or be reduced by half.

**halves** *plural of* **HALF**.

**halyard** /hal-yerd/ *noun* a rope used for raising and lowering a sail, yard, or flag on a ship.

**ham** *noun* 1 meat from the upper part of a pig's leg which is salted and dried or smoked. 2 (**hams**) the back of the thighs. **• ham-fisted** clumsy.

**ham** *noun* 1 an actor who overacts.

2 (also **radio ham**) *informal* **an amateur radio operator**. **• verb** (**hams**, **hammering**, **hammered**) *informal* overact. **• hammy** *adjective*.

**hamburger** *noun* a small cake of minced beef, fried or grilled and typically served in a bread roll.

**hamlet** *noun* a small village.

**hammer** *noun* 1 a tool with a heavy metal head and a wooden handle, for driving in nails. 2 an auctioneer's mallet, tapped to indicate a sale. 3 a part of a mechanism that hits another. 4 a heavy metal ball attached to a wire for throwing in an athletic contest. **• verb** (**hammers**, **hammering**, **hammered**) 1 hit repeatedly with a hammer. 2 (**hammer away**) work hard and persistently. 3 (**hammer something in or into**) make something stick in someone's mind by constantly repeating it. 4 (**hammer something out**) work out the details of a plan or agreement.

**hammerhead** *noun* a shark with flattened extensions on either side of the head.

**hammock** *noun* a wide strip of canvas or rope mesh suspended at both ends, used as a bed.

**hamper** *noun* a basket used for food and other items needed for a picnic.

**hamper** *verb* (**hampers**, **hampering**, **hampered**) slow down or prevent the movement or progress of.

**hamster** *noun* a burrowing rodent with a short tail and large cheek pouches.

✓ *no p: hamster, not hampr.*

**hamstring** *noun* any of five tendons at the back of a person's knee. **• verb** (**hamstrings**, **hamstringing**, past and past participle **hamstrung**) 1 cripple by cutting the hamstrings. 2 severely restrict.

**hand** *noun* 1 the end part of the arm beyond the wrist, with four fingers and a thumb. 2 a pointer on a clock or watch indicating the passing of time. 3 (**hands**) a person's power or control. 4 an active role. 5 help in

doing something. 6 a person who does physical work. 7 a round of applause. 8 the set of cards dealt to a player in a card game. 9 a unit of measurement of a horse's height, equal to 4 inches (10.16 cm). **• verb** give or pass something to. **• at hand** (or **on or to hand**) near; easy to reach. **from hand to mouth** meeting only your immediate needs. **hand grenade** a grenade that is thrown by hand. **hand in glove** working very closely together. **hand-me-down** a piece of clothing that has been passed on from another person. **hand-pick** choose carefully. **hands-on** involving direct participation in something. **hand-to-hand** (of fighting) involving physical contact. **in hand** in progress. **out of hand** 1 not under control. 2 without taking time to think.

**handbag** *noun* *Brit.* a small bag used by a woman to carry everyday personal items.

**handball** *noun* 1 a game in which the ball is hit with the hand in a walled court. 2 soccer unlawful touching of the ball with the hand or arm.

**handbill** *noun* a small printed advertisement handed out in the street.

**handbook** *noun* a book giving basic information or instructions.

**handbrake** *noun* a brake operated by hand, used to hold an already stationary vehicle.

**handcuff** *noun* (**handcuffs**) a pair of lockable linked metal rings for securing a prisoner's wrists. **• verb** put handcuffs on.

**handful** *noun* 1 a quantity that fills the hand. 2 a small number or amount. 3 *informal* a person who is difficult to deal with or control.

**handgun** *noun* a gun designed for use with one hand.

**handhold** *noun* something for a hand to grip on.

**handicap** *noun* 1 a condition that limits a person's ability to function physically, mentally, or socially.





Sandeep Baruah



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Sandeep Baruah

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Rajeesh Ramachandran, Dev Vutwodev and 154 others







**Rajkot**

**VU2VMJ**

**VU2BGH**

**VU3WON**  
**Vijaypura**

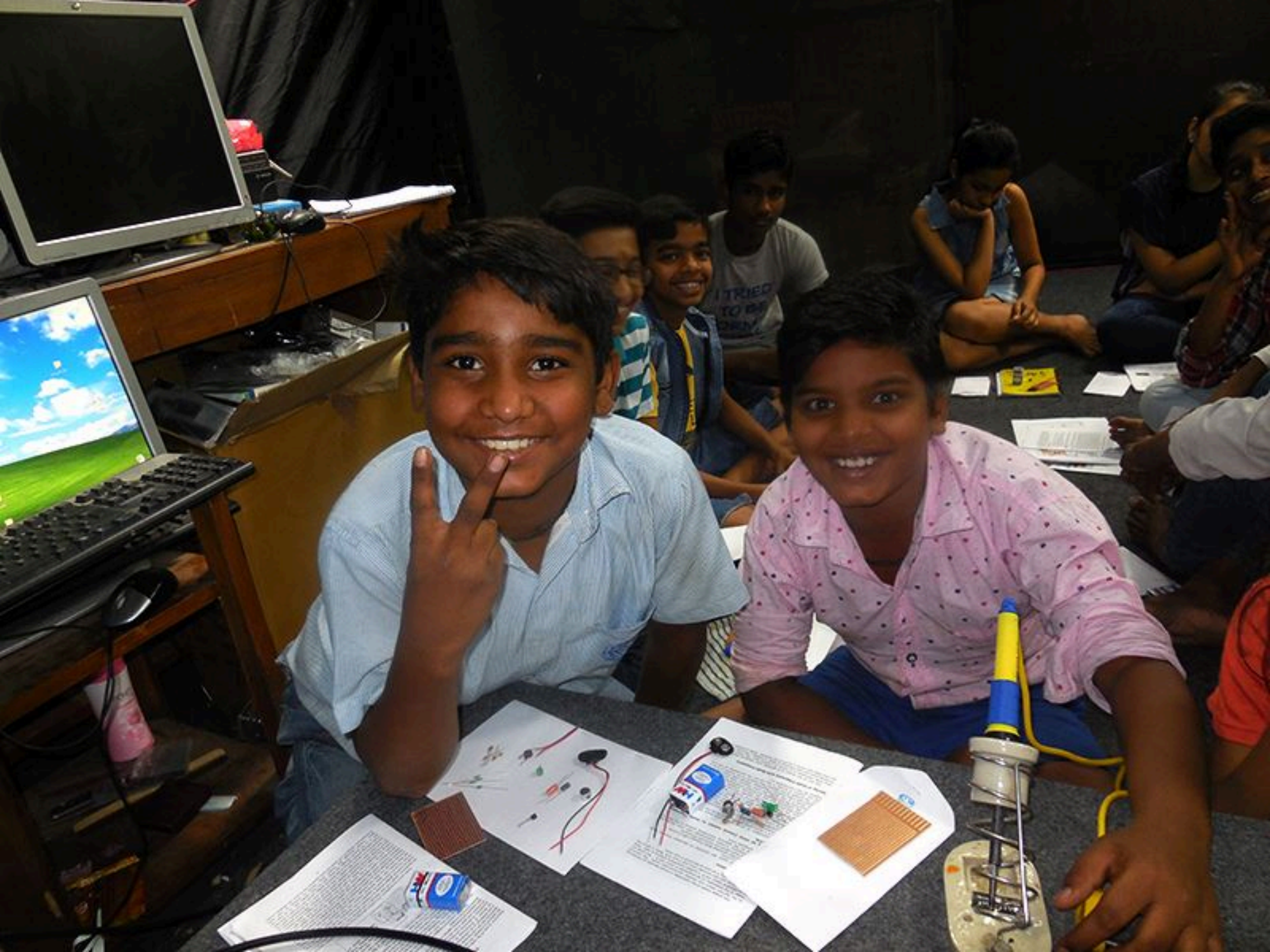
**Payyanur**

**VU3VWB**

**VU2KOC**  
**Belagaum**

**VU2VPR**  
**Pune**



















विद्या मंदिर इंटर कॉलेज में 23 अगस्त को जुटेंगे कई स्कूलों के बच्चे

# अंतरिक्ष यात्रियों से छात्र करेंगे बात

मेरठ | हरिष्ठ संवाददाता

शास्त्रीनगर स्थित विद्या मंदिर इंटर कॉलेज में 23 अगस्त को कई स्कूलों के छात्र अंतरिक्ष यात्रियों से बात करेंगे। यह कार्यक्रम एआरआईएसएस (अंतरराष्ट्रीय अंतरिक्ष स्टेशन स्थित अमेच्योर रेडियो संगठन), चंद्रशेखर विज्ञान क्लब के सहयोग से होगा। कार्यक्रम में छात्रों को करीब 10 से 12 मिनट अंतरिक्ष यात्रियों से बात करने का मौका मिलेगा। छात्र अंतरिक्ष यात्रियों से वहां कैसे रहते हैं, क्या खाते हैं, कैसे महसूस करते हैं आदि सवाल पूछेंगे। छात्र अंतरिक्ष यात्री रिकी आरनोल्ड से बात करेंगे। कार्यक्रम से पहले से चुने गए स्कूलों और कॉलेजों में जाकर बच्चों को अंतरराष्ट्रीय स्टेशन एआरआईएसएस के प्रति जागरूक किया जाएगा।



## ये हैं चुने गए स्कूल

कैपिटल पब्लिक स्कूल, सरस्वती शिशु मंदिर, हर मिलाप इंटर कॉलेज, अंबेडकर इंटर कॉलेज, केंद्रीय विद्यालय डोंगरा लाइन समेत 15 स्कूलों के बच्चे कार्यक्रम में हिस्सा लेंगे। इस बारे में विज्ञान प्रचारक संजय शर्मा ने कहा कि हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है।

कार्यक्रम का काफी समय से था इंतजार

हमारा क्लब बच्चों में विज्ञान के प्रति रुचि के लिए समय-समय पर ग्रामीण, देहात और शहरों में प्रदर्शनी और अन्य कार्यक्रम कराता है। इसके लिए हमारे क्लब को बीनजे अवार्ड से विज्ञान प्रसार ने सम्मानित भी किया है। उक्त कार्यक्रम के लिए हमें काफी समय से इंतजार था। इसके लिए हमने बच्चों को पूर्ण तैयारी करा दी है।

संजय शर्मा, विज्ञान प्रचारक, चंद्रशेखर विज्ञान क्लब



स्कूलों में विज्ञान के कार्यक्रम के लिए मैं अत्यधिक प्रयास करती हूं। लगभग डेढ़ साल बाद हमें इस प्रोग्राम की अनुमति मिली है। पश्चिम में शायद यह पहला प्रोग्राम होने जा रहा है। रंजना गौड़,

प्रधानाचार्य विद्या मंदिर इंटर कॉलेज

हमारी टीम के सदस्य हमें रेडियो के माध्यम से वैज्ञानिकों से बात कराएंगे। इसके लिए अमेच्योर रेडियो सिस्टम से तैयारी की जा रही है।

संदीप बरवा, सीनियर वैज्ञानिक





# VIDYA MANDIR INTER COLLEGE

**Upto XII**

**K-Block, Shastri Nagar, Meerut.**

**Established By - Shakuntla Kaushik**



**नासा के अंतरिक्ष यात्री से सीधे संवाद हेतु चयनित प्रदेश का प्रथम विद्यालय**





**Vigyan Prasar**





Automatically Tracked Callsigns

UU2HUE-2	Add stations to the automatically tracked callsign list by entering them into the text box, pressing return, then by highlighting in the list and pressing the delete key. Used at the call sign as
UU2HUE-7	
UU2HUE-8	
UU2HUE-9	
UU2VEP-9	
UU2ZKC	
UU3GDP-9	
UU3SFF-9	
UU3VU0-9	

FLIP CHART









VU2KOC

VU2MUE





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**HAM FEST INDIA**  
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