

NIAR Delegation participates in World Congress on Natural Disaster Mitigation on 19-22 February, 2004 New Delhi.



From Left to Right

Shri Bandaru Dattatreya, Hon'ble Minister for Urban Development.

Shri K.C.Pant, Hon'ble Deputy Chairman, Planning Commission, Government of India.

Shri Atal Bihari Vajpayee,
Hon'ble Prime Minister of India

Shri Raj Nath Singh, Hon'ble Union Minister for Agriculture at the inaugural session of the World Congress on NDM.

Shri Atal Bihari Vajpayee, Hon'ble Prime Minister of India gave the inaugural address at Vigyan Bhavan on 19th Feb, 2003 along with Shri K.C.Pant, Shri RajNath Singh, Shri Bandaru Dattatreya and others. The speakers stressed the need to evolve methods for sustainable development as part of disaster mitigation... contd..2

Ministry of Communication and IT accepts NIAR Proposal for promotion of Amateur Radio in the country.

In our earlier newsletters we have mentioned about the visit of Shri K.K.Jaswal, Secretary, IAS, Department of Information Technology, along with senior officials from WPC (DoT) to NIAR and their appreciation to our proposals. It was also mentioned about the letter written by Secretary, DoT encouraging our proposals.

Dr. Shrikant Jichkar, Chairman, NIAR led a team of officers from NIAR and met Shri P.K.Garg, Wireless Advisor to Government of India at his chambers on 26.8.2003. Shri Garg also appreciated our promotional activities and assured all support from WPC.

The NIAR has launched a major programme to setup 10 Amateur Radio centres with full fledged facilities of equipment support by the end of March 2005. It was formally inaugurated at NIAR on the 1st April 2004.

Department of Information Technology, Ministry of Commn. & IT held a meeting with representatives of WPC(DoT) and Ministry of Home Affairs on 23.3.2004 and discussed on the NIAR proposal. The proposal is approved by the Government now.

N.I.A.R Activities

Policy:

Government of India supports NIAR's proposals

Demo/Lecture:

Loyola Engineering College, Hyderabad.

St.Moses High School - Hyderabad.

Conference:

World Congress on Natural Disaster Mitigation - 2004.

Visits:

A team of 50 students from Madhanapalle Engineering College, Madanapale visits NIAR to pursue the Amateur Radio.

National Science Day Celebration at Nalgonda

Contd...Page 6

But What if the Internet Fails?

By Rick Muething, KN6KB

How Winlink 2000 Will Handle Loss of Internet Forwarding?

The Winlink 2000 Ham radio message system (WL2K) makes extensive use of Internet forwarding. All messages to and from Internet users and all messages from the central server to the participating PMBOs and Telpac nodes are forwarded via Internet. This has proven fast, efficient, reliable and frees up valuable radio spectrum for mobile or emergency stations. But what happens if the Internet fails?

Contd...Page 7

WORLD CONGRESS ON NATURAL DISASTER MITIGATION

19-22 February, 2004 New Delhi, India.

The Institution of Engineers (India) the largest professional society in South and Central Asia under the sponsorship of World Federation of Engineering Organisations (WFEO) organised a World Congress on Natural Disasters Mitigation at New Delhi.



Mr.S.Suri, VU2MY gave a Presentation in one of the **Plenary Sessions - (Technical Session A-3) Role of Professional Institutions and NGO's**, in which he described about role played by Amateur Radio Operators in Disasters, with live demonstration of Echolink ("A New Revolution in Amateur Radio"). A contact was established with OM Bob/VE7AMY and his XYL Maybel/ VE7OSD, greeted the Participants from Canada. A poster presentation was also made by NIAR to explain the role of Hams in disasters.

Objectives of the World Congress

The objective of this World Congress was to provide a multi-disciplinary forum for engineers, architects, planners, technocrats, scientists, disaster-managers, international and national voluntary organisations and others (who are associated with the work in the field of natural disaster) to meet and share their expertise and ideas as well as their experiences in mitigating the natural disaster. Exclusive slots were provided for authors of articles to present their study through Poster Session and interact with delegates of eminence in their chosen specialized fields. To cover the entire facets of natural disasters, the Congress has been structured to have five Plenary Sessions and twelve parallel technical sessions embracing various aspects of theme.

Plenary Sessions were organized during the World Congress.

- Synthesis of global experiences in disaster mitigation and management strategies and practices for sustainable development with spotlight on country reports.
- Lessons from major global disasters with spotlight on vulnerability reduction programs.
- Disaster capacity building, disaster education, public awareness and community participation.
- Financing of disaster management programs including role of Governments, public and private sector organizations, and insurance companies.
- Contribution and role of international agencies and voluntary organisations, and access to global databases and global early warning systems. Parallel Technical Sessions
- Prediction and forecasting of natural disasters and early warning against natural disasters.
- Best practices in disaster preventive action, and transfer of knowledge on the basis of the best practices.
- Building Codes, and techno-legal aspects including role of insurance.
- Modern approaches and techniques of multi-hazard mapping with emphasis on projection of damage scenarios and risk assessment adoption to different situations.
- Tapping the potential of remote sensing, GPS and GIS in disaster mitigation.
- Disaster vulnerability of physically challenged, the aged, the ailing women and children, and associated disaster reduction strategies.
- Safety of human settlements, structures of post-disasters importance and vital links of transportation in disaster prone areas.
- Modernization of communication system in disaster management.
- Civil societies role in disaster management (as different from NGO is role).
- Skills required for handing different kinds of disasters and at different levels (policy level, administrative level, funding level, NGO level) and their coordination.
- Socio-economic aspects of natural disasters.
- Global partnerships and disaster knowledge network : nurturing of traditional knowledge in disaster mitigation and management, in the ambience of modern science.

NIAR Delegation participated in World Congress

Mr.S.Suri, VU2MY Founder, Executive Vice-Chairman & Director, National Institute of Amateur Radio gave a presentation, Er.G.L.Rao, VU2GL, Vice Chairman, NIAR (Immediate Past President of The Institute of Engineers (India)) Mr.S.Ram Mohan, VU2MYH, Joint Director,NIAR, Mr.Kailash Gupta, VU2KIZ (Life Member), Mr.R.Sarath Babu, VU3RSB and Mrs.Bharathi Prasad, VU2RBI also participated.

Valedictory Function

On Feb 22, Valedictory Address was given by Shri L.K.Advani, Hon'ble Deputy Prime Minister of India and Hon'ble Minister for Home, during the address he explained the role of Disaster Preparedness by Government and his personal experience in Gujarat Earthquake and other disasters in Gujarat. He also lauded the efforts made by NGOs for providing people with much needed support and participation of local People in development activities as remarkable.

Glimpse of the Event

Over 700 Delegates from India and also from WMD, UNDP, EC, ADRC, USAID, ADRC, and delegates from Asia, Africa, Pacific and European countries.

The proceeding of the World Congress were brought out in two volumes consists of 250 technical articles, which were circulated among the participating delegates of the congress along with a souvenir.

2 Meter portable Zigzag Antenna

by Jay Jaffery, WV8R
source www.w6wr.com

A few years ago I needed a portable 2 meter antenna that I could fit in a briefcase and take along on trips, one that could be hung on a door or in a window. In order to be worthwhile, it had to be capable of doing a better job than a rubber duck or a telescoping antenna on my HT. At the time, there weren't any commercial ones available, so I decided to design one.

Beginning with a vertical half wave dipole mounted on CPVC pipe, I tried bending the dipole sections into various vshapes. The object was to bring the impedance down to 50 Ohms. The shape that resulted in an omni directional antenna with the correct impedance and reasonable gain turned out to be a zigzag. The shape also had the advantage of reducing

Techkriti 2004 : A Report - Rahul, VU3WJM

The annual intercollegiate technical festival at IIT Kanpur was held from 26th to 29th February. Over the years it has become one of India's largest Sci Tech events. There was a huge participation from both academia as well as industry.

More than 100 colleges from all over the country participated in this festival. The four day festival covered lot of activities and events like model making, paper presentation, lectures and workshop, software, robotics, astronomy, electronic circuit design, marketing, structure making, quiz and entertainment.

IIT Kanpur also has a HAM club VU2IIT under charge of Tushar Mittal and support from faculty members like Prof Harish an old timer. Many of us were requested to assist and manage the events related to HAM radio.

HAMs who participated in this events events were: Delhi: VU2YI Sanat, VU3FUN Rajesh, VU3BPA Arun. Lucknow: VU2DCT Pandit, VU3NRI Nikhil, VU3WJM Rahul, Siddharth Son of VU3WJB.

The activities include:

- A. Lecture - Radio technology and construction techniques. By VU3WJM
- B. Interactive multimedia presentation on HAM radio. By VU2YI
- C. Workshop: Construction of 20 Meter superhet receiver TK24R designed specially for the occasion By VU3WJM.
- D. Construction of 3 element 2 meter portable yagi.
- E. Demonstration : Implementation and use of micro controllers. BY VU3BPA
- F. Radio operating HF and VHF managed by VU3FUN and VU2DCT.
- G. Fox hunt conducted by VU3FUN, VU3BPA and VU2DCT.

Fox VU3FUN transmitting from a temple half a KMs from start point was tracked down by participants in 40 mins.

The festival was a great opportunity for us to promote our fantastic hobby. We all are highly obliged to the organizers, IIT-Kanpur and participants for giving us the opportunity and in making it a highly successful event.



Figure 1

the length of the antenna by a significant amount. This may be seen in Figure 1. Figure 2 shows how the antenna can be folded for carrying. It does indeed fit in a briefcase.

Fig. 1(left) Zigzag antenna in operating position.

Fig. 2 (right) Zigzag folded for carrying.

The construction of the antenna is fairly simple. A 15 inch piece of CPVC pipe (5/8 inch o.d.) is used to mount the dipole sections and to contain the coax feed line. The pipe could be made shorter if your briefcase is smaller than mine. However, the coax should be 15 feet long.

Details of the bolt and wing nut arrangement that holds the dipole sections are shown in Figure 3. Note the large holes drilled into the back of the pipe to facilitate mounting and connecting the bolts and coax. Some white plastic tape can be used to cover these holes after the connections are made. Rubber tips or something similar should be used on the ends of the dipole for eye safety.

Pipe caps serve to waterproof the connections. Also, the top cap can be used to mount a hook for hanging the antenna, and the bottom cap locks the coax in the side of the pipe.

The dipole sections can be made of thick copper wire, copper rods, or brass rods. The material should be sturdy enough to keep its shape when the antenna is folded and stuffed in a briefcase because the shape determines the impedance. The wire or rods should be at least one eighth of an inch diameter. At one end of each section there should be an eye formed that will fit on the mounting bolts. Measuring from the end of the eye to the tip, the upper section should be 19.75 inches long and the lower section 19.25 inches long as shown in Figure 3.

Tuning the antenna is done in the following way. Bend the upper section to a 120 degree angle and the lower one to a 90 degree angle. Place them as shown in Figure 1. Make sure the bottom of the lower section is bent so that it is 2 inches away from the support pipe. With an SWR meter in the line, transmit briefly at low power on a clear frequency. If the SWR is low, you are

done tuning. If not, decrease the angle of the upper section slightly and check again. If the SWR improves, bend a little more until it is good. But if decreasing the angle makes the SWR higher, try increasing the angle instead. Use the same procedures with the lower section. Make sure the ends of the sections are in line with the support pipe. By the way, a good antenna analyzer makes adjustment a lot easier.

Coax length, type, and quality can have a big influence on the impedance adjustment. For example, one particular zigzag I built had a 12 foot coax (RG58) and required 105 degrees on the top section and 70 degrees on the bottom section in order to have a 1 to 1 SWR. At any rate, experimenting with the shaping can be an interesting project, and once it is done for, say, 146.00 MHz, it will be good for the whole band and will only require readjustment if it is bent out of shape by accident.



Figure 2

Fig. 3 Details of dipole connector

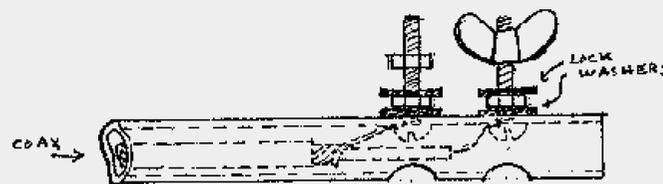


Figure 3

By substituting proportionally shorter lengths for the dipole sections, the antenna can be operated on other VHF and UHF bands. However, these higher frequencies are more difficult to tune, and the nature and length of the coax is more of a problem.

Incidentally, never touch the antenna during transmission. Like any antenna it is dangerous when it's radiating RF, especially if the power level is high.

Finally, once the antenna is tuned, it is reliable and very durable. I have used the same zigzag for a number of years and have never been gentle with it. Some of my friends have them and report the same experience. It's a handy gadget.

QARL NEWS

The Quilon Amateur Radio League is celebrating the World amateur Radio Day on 18th April, 2004 at Jaladarshini auditorium Thevally, Kollam. The programmes are Ham Fair 2004 and VIIIth Kerala VHF Fox Hunt. The major attractions of the event are special interest groups, Flea Market and stalls with wide range of exhibits from various distributors of amateur Radio.

On behalf of the QARL, we invite you along with your family and friends to participate in the programme.

Venue

Quilon Amateur Radio League
Jaladarshini Auditorium
Thevally, Kollam

Contact Info

Quilon Amateur Radio League
P.O.Box No:335 Kollam – 691001
e-mail: qar1@rediffmail.com
Ph: 0474-2762986,2552749

Visit www.niar.org/qarl1.html

Jacob T. Kosyvaideyan, VU2VAT, General Convenor
K.G. Nadarajan, VU2KGN, President
P. Surendran, VU2SYT, Secretary

NIAR Project Proposal

The present project proposal is a follow up action after Orissa Super Cyclone '99, Gujarat Earthquake '2001 relief operation and considering latest developments in USA and other developed countries.

We are working on this proposal for the past 3 years involving Planning Commission, Government of India, DOT, DIT and other government and non-government agencies. You may be aware that the Planning Commission had organised a presentation and thereafter Principal Advisor to Planning Commission held series of reviews/meetings with National Institute of Amateur Radio and many other clubs/societies in India and a very transparent committee involving all concerned including Mr. Saharuddin, Past President ARSI.

GEM Net World Wide Contest - 2004

"GEM" is acronym for General Emergency Medical Net and this contest is to celebrate the World Amateur Radio Day on 18th April and 15 years of GEM Net on September 21 2004.

Date and Contest Period

April 17 – 18, 2004 (1200UTC Saturday and 1200 UTC Sunday) visit www.niar.org/gemnet/ for more information.

NIAR ACTIVITIES

January 28, 2004

Loyola Academy organized "Scintillations 2004" on January 28, 2004 at Loyola Engineering College, Secunderabad. Academy also invited National Institute of Amateur Radio to give a presentation cum live demonstration of Amateur Radio.

Mr. S. Ram Mohan, (VU2MYH) Jt Director, NIAR with the team members Mr. Jose Jacob, (VU2JOS) Administrative Officer and Mr. Ramakrishna SWL participated and shown the various digital techniques and "Echolink" to the students.

Many students were delighted about the technology developments in the field of Amateur Radio and presented a memento to Mr. S. Ram Mohan.

February 15 & 16, 2004

St. Moses High School organized a Science Fair Exhibition at Santosh Nagar, Hyderabad.

National Institute of Amateur Radio stall was setup at the Exhibition and shown the live demonstration to the students from various local schools.

Mr. S. B. Ram, VU2LIC, Addl. Director, Mr. Sushil, VU2LFA, Mr. Sarath, VU3RSB and Mr. Ramakrishna, SWL participated.

February 27, 2004

Madanapalle Engineering College organized a study tour to the group of Electronics & Communication Engineering Students to National Institute of Amateur Radio.

Mr. S. Ram Mohan, VU2MYH gave a presentation cum live demonstration of H.F./ V.H.F/ Echolink / RTTY / SSTV modes of communication along with Mr. Sushil, VU2LFA & Mr. Sarath, VU3RSB.

Mr. Jose Jacob explained about the RACES / NIAR Library / Stores / QSL Bureau etc.,

OM Gabriel, KG6HMN from California along with OM Manoj, VU2MKC (Now in Riyad) joined for Echolink Demonstration and interacted with the Students with a simple Walkie-Talkie.

But What if the Internet Fails?

Rick Muething, KN6KB
Vic Poor, W5SMM
Source: www.winlink.org

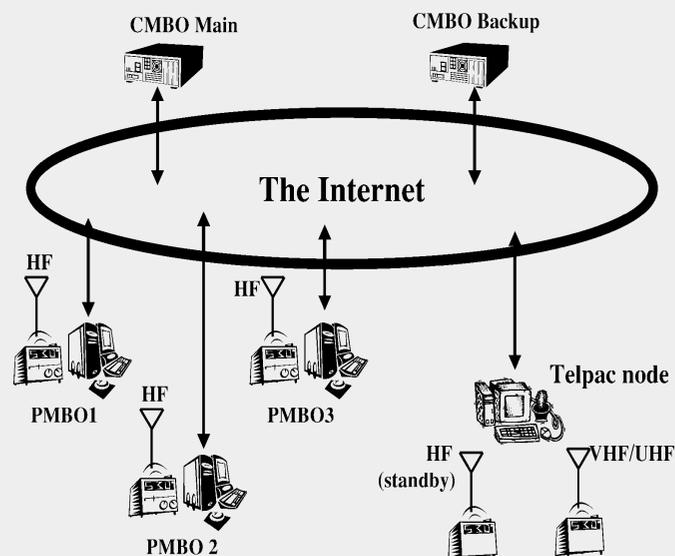
What is the Internet and What is an Internet "Failure"?

We all know the Internet is a vast world-wide network of literally millions of interconnected computers. What is not fully understood by some is the actual network is a highly redundant collection of communication media with sophisticated hardware and software controlled routers that dynamically direct connectivity and data transfer between these computers. The Internet is in every sense of the word distributed... there is no one central control function or facility that controls it. What this means is that we should think of an Internet "failure" as most likely a localized loss of connectivity to some of the computers on the Internet network. It would be very difficult (some might argue nearly impossible) to cause a catastrophic loss of all connectivity on the Internet. The many redundant nodes, communication channels, routers and servers on the network provide an extremely large amount of flexibility in detecting network outages and the ability to reroute data between computers on the Internet. Even widespread power outages like the one experienced in the NE US and Canada in Aug 2003 did not bring down a substantial fraction of the Internet. What we as WL2K developers want to provide is a mechanism within the WL2K system to handle the most likely type of failure which is loss of internet connectivity by one or more participants of the WL2K system.

The WL2K system big picture.

Winlink 2000 is a network that uses both Internet and Radio (HF, VHF, UHF) connectivity to forward and deliver messages. Figure 1 shows a simplified diagram of the Winlink 2000 system showing a main and backup Central Mail Box Office (CMBO) three Participating Mail Box Offices (PMBOs) and a Telpac node. The actual system has over 40 PMBOs and over 100 Telpac nodes to provide global HF coverage and selected local area packet coverage. The two CMBOs are identical and exchange synchronization data to allow either one

to be able to take over the central server functions. PMBOs typically have full time Internet connectivity and operate one or more HF radios typically scanning several frequency bands. Some PMBOs also maintain VHF and UHF packet nodes but the majority of packet nodes are supplied by what are called Telpac nodes. These simple Telpac nodes contain no local database and simply bridge (via Internet Telnet) packet connections to the Telnet servers of remote PMBOs. Radio users of the system connect directly to PMBOs or Telpac nodes via HF Pactor or VHF/UHF packet. Users also can use a direct Telnet or Web connection to the system if they have Internet access. Typical message latency....the time from reception of a message from a



user to the delivery to another user (radio or Internet) is on the order of 2 minutes or less. All message forwarding (between PMBOs, the active CMBO and the Internet user) are normally done via TCP or Telnet connections using the Internet.

Fig 1. Simplified Diagram of normal WL2K system operation. The actual system may have 40+ HF PMBOs and 100+ Telpac VHF/UHF nodes. All forwarding between system participants is via Internet TCP/IP or Telnet. For simplicity no User connections are shown.

How does WL2K handle an Internet Failure?

Figure 2 graphically shows the system in Figure 1 with three failures resulting in loss of connectivity of a CMBO, a PMBO and a Telpac node shown by the red Xs and black balls on the diagram. It is worth noting this loss of connectivity could be from any one of a number of actual failures such as computer hardware or software, communication media, local ISP or router failure. The diagram shows three mechanisms where by the system recovers and continues delivering messages to users.

If the Primary CMBO fails or loses Internet connectivity the backup CMBO (with a recently synchronized database) comes on line. The synchronization mechanism insures that inbound E-mail will automatically switch over (no change of external SMTP addresses) as the backup CMBO assumes the primary CMBO function. Only messages received from the Internet but not yet forwarded to the PMBOs (typically about a 1-2 minute interval) are at risk of being lost in the startup of the new master CMBO. PMBOs are set up to automatically switch CMBOs if they are unable to connect.

A failure in a PMBOs Internet connectivity (PMBO 2 in the figure 2) will trigger an emergency connection attempt from PMBO 2 where a high speed HF Pactor III link will be established to one of several (prioritized based on location and time of day) remote PMBOs. If one of those PMBOs has Internet connectivity to the CMBO it will accept and maintain the emergency RF link allowing PMBO 2 to communicate to the CMBO by way of the RF link and the working Internet connection of that PMBO. The establishment of the emergency RF link is automatic but the maintenance and optimization of emergency RF links (including frequency re assignment) would then normally be controlled by the Sysops to insure maximum flexibility and reliability throughout the emergency.

If a Telpac node loses its Internet (Telnet) connectivity to a remote PMBOs Telnet server it first tries an alternate PMBO server and if still no Telnet connectivity it can initiate a HF Pactor II or III bridge to a PMBO that has internet connectivity as PMBO 3 does in the diagram. Not all Telpac nodes have this HF bridge capability but for applications where "last mile" connectivity needs to be guaranteed during loss of Internet connectivity this provides a relatively simple,

moderate cost robust solution. This would allow for example local packet network emergency traffic served by the Telpac node to bridge out via long-haul HF to reach the Internet in cases when there was a local disruption in Internet connectivity as might happen in a localized disaster.

Because of the limited bandwidth available on the HF emergency channel (typically 800 bits per second for Pactor II and up to 2800 bits per second for Pactor III) forwarding on the emergency channel can be restricted (for example limiting attachments) if required.

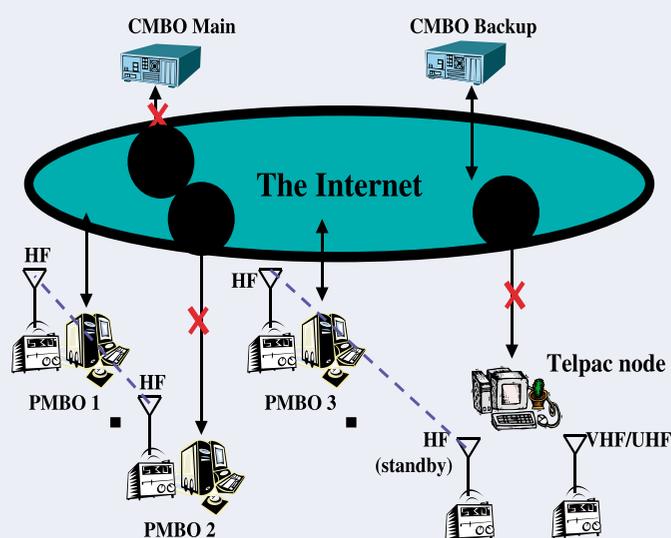


Fig 2. The WL2K system of figure 1 with loss of 3 Internet connections. Backup CMBO has come on line to assume primary CMBO functions. PMBO2 has established an emergency Pactor III link to PMOB1 to reach the CMBO. The Telpac node has established an emergency Pactor II connection to PMBO3 to establish Telnet connectivity and forward local packet traffic. For simplicity user connections are not shown.

SUMMARY:

This extension of Winlink 2000 will provide another layer of redundancy to the system and automatically adapt to the most likely types of Internet "failure". The mechanism will include provisions for sysop control, optimization and rationing of HF radio emergency links during periods of Internet outages.

For additional information on Winlink 2000 and Emergency Communications applications and examples see <http://winlink.org/Emergency.htm>

WORLD AMATEUR RADIO DAY 2004 - APRIL 18, 2004

The theme for World Amateur Radio Day 2004 is "Radio Amateurs: Pioneers in Bridging Barriers to World understanding."

Nalgonda Amateur Radio Club Activities

National Science Day is being observed throughout the country on 28th February in remembrance of the day Indian Nobel laureate Prof CV Raman propounded his Raman Effect to the scientific world. The theme for this year's National Science Day observance is 'Encouraging scientific awareness in the community'.

Speaking at an observance function organised by K.K.Technical Educational Training Institute Sri M.C.Lal Project Director, DRDA & Special Deputy Collector, Nalgonda said that the science popularization programs being organized would help in developing scientific temperament among the people.

National Institute of Amateur Radio was invited to participate in the event. Sri Sarath Babu, VU3RSB gave an Impressive presentation on HAM RADIO and its functions. Sri Sushil Kumar Dhingra, VU2LFA explained the indispensable role of HAMS during Natural Calamities. A demonstration on Walkie-Talkie, Digital communications & Echolink appealed audience a lot.

Sri V. Venu Gopal Rao "VU3 BAO" & Sri M. Narsing Das SWL, Ms.Sonia, SWL - 112 from Hyderabad were also present on the occasion and contributed their ideas and motivating students to take up Ham Radio and other participants came forward forming a HAM CLUB in the Nalgonda Dist.

Indian Institute of Hams (IIH), Bangalore

Activities for promotion of Amateur Radio conducted by Indian Institute of Hams, Bangalore.

12th January 2004 - **Madanapalle Institute of Technology and Science**, Ratakonda Ranga Reddy Academy, Madanapalle – 517 325. A.P. Over 120 Students studying Electronics, Communication and Telecom participated in the program which included Lecture cum demonstration with Slide presentation by Sri S.Satyapal, VU2FI and Sri R.J.Marcus, VU2VTM.

24th January 2004 - 90 students participated in a Lecture cum demonstration at **B.M.S.College for Women, Bangalore** by Sri S.Satyapal VU2FI, Sri R.J.Marcus, VU2VTM and YL Shubha, VU3GIM.

ASOC Examination is scheduled to be held on 3rd April 2004 for 61 students of **Jawaharlal Nehru National College of Engineering**, Shimoga by Officer-in-Charge, Monitoring station, Mangalore. The activity is coordinated by IIH.

Are you an Unemployed HAM?... Here is a great opportunity looking for you...

We are looking for as many volunteers as possible to participate in our project.

All those interested may write to the NIAR giving details of their Amateur Radio activity and those willing to stay in rural areas and promote amateur radio by taking classes, awareness programs, demonstrations and assist in conduct of ASOC examination.

The Volunteers should hold a valid Amateur Radio License and should have knowledge of operating Amateur Radio equipment.

Please send your resume immediately to Admn. Officer, NIAR.

Book-Post

To:

If undelivered Please Return to

NATIONAL INSTITUTE OF AMATEUR RADIO

6-3-1092/93, Raj Bhavan Road Somajiguda, Hyderabad – 500 082. India

Email : niarindia@hotmail.com, info@niar.org

URL: www.niar.org, Telefax: 040-23310287

Club Station: VU2NRO 14.160 Mhz, Echolink-Node: 133507.