Ham RADIO News

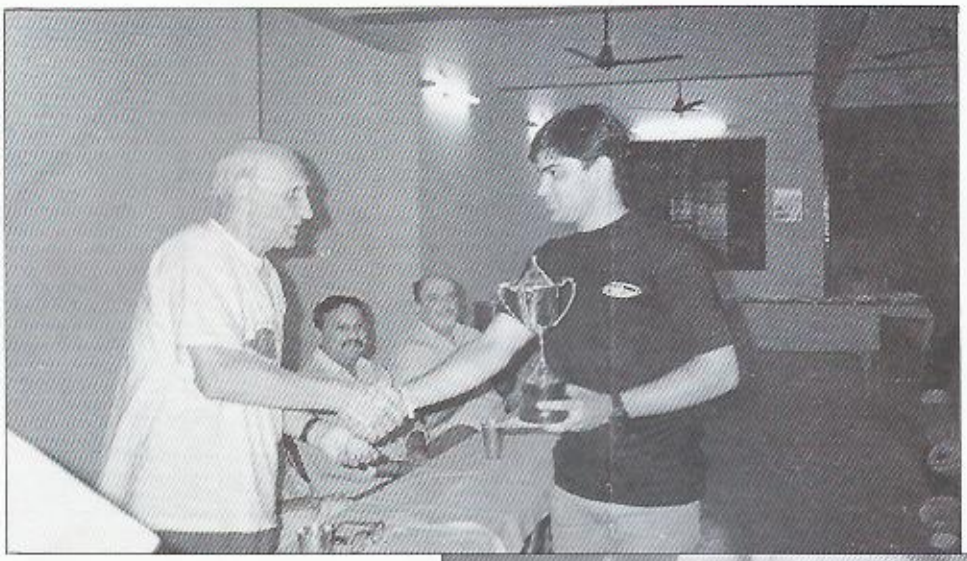
Vol V No.2 Apr/June1999.

The Journal of Amateur Radio Society of India (Member of IARU)

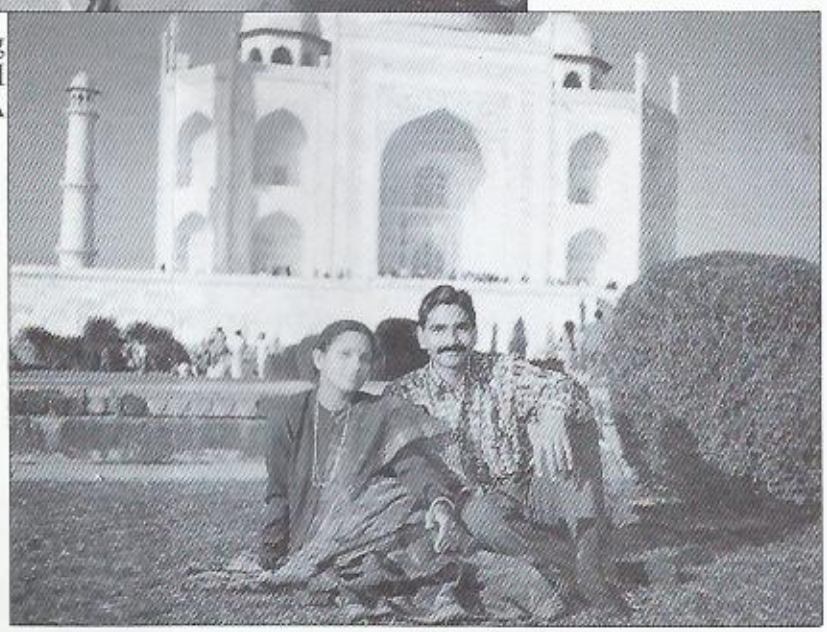
"AMATEUR RADIO- A NATIONAL RESOURCE"


## Looking into the Future

## "Moon Buggy or Ham of the New Millenium"



Honoured guest VU2IJ Jimmy giving away trophy and cash to RAJESH GADAKH winner of NASA WINTER RALLY '99.



Ham Family
VU2RNC-Raman and VU3RNC-Sandhya

**VU2JNA Club Station Operators (L-R) VU2RIC Rajan, VU3PVN Venkat, VU2CAV Amita and VU2LNZ Girish, operating the 1998 CQ WW-WPX SSB Contest and top scored in India and awarded a certificate.**

## EDITORIAL

As members are aware, we had approached the Defence Minister to permit expeditions to Andaman, Nicobar and Lakshadweep Islands. Despite various assurances from well-wishers, within the Ministry of Defence (MoD) and elsewhere, the effort has not succeeded. The reply received from MoD is being published elsewhere in this issue. We are further pursuing the matter with the MoD for a review. In the meantime, there is no possibility of organizing any expedition to the concerned areas.

Of late, too many queries are being received, both over phone as well by post, regarding progress of cases in W.P.C. These are welcome. However, it is essential that a minimum of 6 months be allowed from the date of result before making such enquiries.

We have been regularly harping on the need for unity among amateur fraternity. This requirement is greater today than ever before. Our voice will be heard only if it is loud enough.

We have approached W.P.C. / D.O.T. for
- release of 10 MHz band ( 50 KHz slot) for use by Indian amateurs, on secondary basis (released by WARC-79 in 1979, 20 years ago)- March, 1998;
- release of a narrow slot, 50.00 to 50.25 MHz, on secondary basis- in March, 1998;
- acceptance of demand draft from any bank, without insisting that it should be from State Bank of India, as is the practice in all departments, including Department of Telecommunication- March, 1998;
- recognition of equivalent licence grades with respect to licences issued in USA, UK, Europe, etc. (Presently, all foreigners are given Grade II licences, until they can provide evidence of having a higher grade of licence in the country concerned) - September, 1998
- modification in Amateur Service Rules, 1978- March, 1999.

We are still awaiting for response/acknowledgment that these matters are receiving their attention. However, a positive response from W.P.C (or for that matter, from any Govt. organization) will depend on the Society's strength. The more we are, the chances of our being heard in the corridors of power will increase.

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has been discontinued)

## IMPORTANT

**Your fees for 1999-2000 is due. Pay before 30th June to avoid penalty and ensure you are eligible to vote in the forthcoming elections to the Governing Council. The cut off date is 15th July 1999.**

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## AIRNET IS 18 YEARS OLD-

**Jose Jacob VU2JOS**

The 18th anniversary of AIRNET India passed by recently without anyone knowing or mentioning about it. This daily Net was conceived by Om Dasan, VU2AID as a means of contacting like minded Amateurs in India and elsewhere, at a specific time and frequency soon after the 5th All India Ham Convention held at Bombay. The support received for this activity resulted in a daily net, which is now a fully active and popular Net even after 18 years.

AIRNET, "The All India Amateur Radio Communications and Propagation Net" was started around February 4, 1981 with VU2NA as the very first checkin. It was OM Brad, VU2USE who gave the name to the Net, which is conducted on 14150 kHz. The Net has indeed achieved certain objectives by handling many medical and emergency traffics and for knowing about the daily propagation conditions on 20 meters in and around India. It also has helped lots of Amateurs to catch their wanted stations.

While it is a matter of regret that many of the amateurs who are very active otherwise do not participate in the Net, it is heartening to see some old timers and others taking a keen and active interest in the net. Thanks to several Indian hams, 14150 kHz has come to be known as the VU land frequency. In fact, one can often hear several Indian stations using this frequency when the net is not in progress. Station from all parts of India check in the Net promoting national integration. Except during some occasional interference, the Net is conducted on 14150 kHz itself.

At first the net was conducted at 9.00 PM IST and later at 7.30 PM, 8.30 PM and 9.30 PM and now it is at 7.00 PM. Because of the propagation conditions, more than one person is needed to run the Net efficiently, usually one from the Northern part of India and another from the Southern part. Earlier, the stations were called postal zone wise i.e. from 1 to 8, which was inconvenient for stations in the last zones, as they had to wait for a long time to be called in. This procedure was changed by VU2AF some years back and now anyone can check in whenever new checkins are called. At first calls go for any medical and emergency traffic, then Indian stations are called and at last calls go out for any DX stations also.

The net has received its own callsign viz. VU2NET and has no affiliation to any individual or organization. In the past, Net reports were published in The Radio magazine, KARS QSL etc. by YL Grace, VU2AIG. At first, VU2TN, Major Ramakrishnan was the Net Manager and he also issued several classes of "Active Amateur Award" to those who actively participated in the Net. In 1982, VU2MY Mr.S.Suri, Executive Vice-Chairman & Director, NIAR was given "Special" category of Award for his exemplary contribution to the Airnet.

The list of Net Controllers/Alternate net Controllers/Relays is a big one but the prominent ones were VU2AB, VU2AID, VU2AIG, VU2ARL, VU2BBJ, VU2BUD, VU2HQ, VU2HSM, VU2KNN, VU2KZ, VU2LQA, VU2NRL/LNM, VU2MKS, VU2NA, VU2NUT, VU2PP, VU2RX, VU2RYL, VU2SUN, VU2TN, VU2VRG, VU2YK, 8Q7AZ etc.

Now a days, the net is controlled by VU2AF, VU2CBE/KNK, VU2PEP, VU2RKS, VU2RUZ etc. at 1900 hrs IST (1330 UTC) for about half an hour on 14150 kHz USB. NIAR HQ station VU2NRO check into the net very regularly and sometimes also control it .

NIAR congratulates AIR Net India and wishes it continued success!

(Information on early days of AIRNET was compiled from articles written by the Net Manager, Major Ramakrishnan, VU2TN

*Courtesy NIAR Ham News*

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## SILENT KEYS

Silent keys in March 1999:

| | |
|---|---|
| VU2OHZ | VU2KO |
| VU2ENG | VU3RBK |
| VU2MHG | |

### King Hussein of Jordan , JY1, SK

The late King Hussein's role in the middle east is well known all over the world. However, amateur radio enthusiasts, even those who had the honour of working JY1, may recall that His Majesty's support "was invaluable to us in obtaining new amateur bands (namely 12, 17 and 30 meters) at the 1979 World Administrative Radio Conference. Jordan's support of the Amateur Service was much in evidence at the conference that fall, and was a crucial element in our success." (David Sumner, K1ZZ, ARRL Executive Vice President). While the world mourns the death of the ruler, we mourn the loss of a friend who believed in Amateur Radio.

### John Allaway, G3FKM

We note with great sadness the passing, on March 7 after a long illness, of IARU Region 1 Secretary John Allaway, G3FKM. John twice was called to serve as the President of the Radio Society of Great Britain, in 1976 and again in 1982. His remarkable commitment to Amateur Radio was highlighted by his many years on RSGB Council, where he served four terms as an Ordinary Member during a 30-year period, and his writing of the HF column in the RSGB Journal, *RadCom*, from 1966 until 1998.

## HOMEBREW NEWS

TWO METER S W R BRIDGE

Now a days most of the Hams are using VHF trx's, it is a must to match the antenna to the rig perfectly. That is to get 1:1 SWR. This SWR bridge is indispensable and cost effective.

COMPONENT LIST:

(A) for SWR bridge
1. Eliminator box (small) - 1 No.
2. BNC female connector - 2 Nos.
3. Resistor 47 ohms, 2W - 3 Nos.
4. Resistor 10 K ohms, 1/4W- 1 No.
5. Diode 1N 4148 - 1 No.
6. Capacitor 100pF (disc ceramic)-2 Nos
7. Banana post (red) - 1 No.
8. Lug - 1 No.

(B) for patch cord
1. BNC male connector - 1 No.
2. Co-ax cable of short length - 1No. (say 0.2 m of RG 58)

CONSTRUCTION

Construction is simple, make the leads of resistor, capacitor, diode etc., as short as possible. Direct point to point wiring is done (without using PC board).

HOW TO USE:

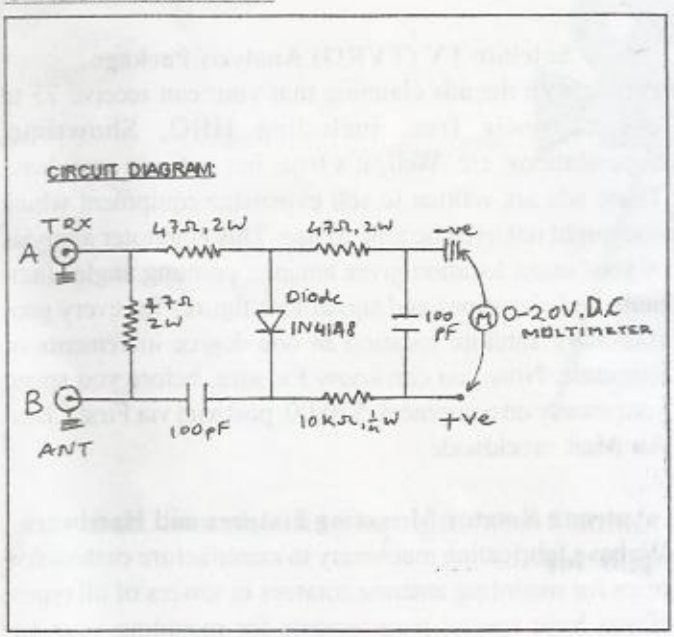
THIS IS NOT AN ON-LINE DEVICE. Connections are made only to check the SWR.

USE AS LOW POWER AS POSSIBLE (use QRP).

Keep the multimeter to read 0-20 v DC. Connect the Trx to the BNC (A) and press PTT, note down the reading on multimeter, say 'X' volts. Keeping Trx connected to BNC (A), connect the antenna to BNC (B) and note the reading on multimeter, say 'Y' volts. Now the SWR (say 'M') is calculated using the following expression.

$$M = \frac{X + Y}{X + Y} \text{ than, SWR is } 1 : M$$

CIRCUIT DIAGRAM:




## FOLLOWING EQUIPMENTS ARE AVAILABLE FOR SALE

| | | |
|---|---|---|
| 1 Sangean ATS 803A World Band Radio with SSB, PLL, Digital with 1 kHz resolution | 1 No. | Rs.3,500 |
| 2 BEL HM 25 TXR 2- 12 MHz (Synth) | 2 Nos. | Rs.4,000 each |
| 3 BEL GE 524 TXR 2- 30 MHz X-tal cntrl | 2 Nos. | Rs.3,000 each |
| 4 ALINCO DR140,50 WVHF TXR, good cdx | 1 No. | Rs.15,000 |
| 5 I-Com IC-2GXAT VHF Hand-held TXR | 1 No. | Rs.7,000 |
| 6 Multi-mode controller PK232 MBX | 1 No. | Rs.10,000 |
| 7 Data Cont for CWFAX/RTTY MFJ1214PC | 1 No. | Rs.3,000 |
| 8 DC reg. PS 20 A 13.8 v with dig. Panel mtr | | Rs.6,000 each |
| 9 VHF/UHF antennae for base/mobile use, up to 15 dBi gain, Computer-modelled and optimized, using NEC | | Contact for quote |
| Contact: M.B.Singh VU2MB, R-231, Sector 21, Jalvayu Vihar, NOIDA-201301 Ph: 0118-539560 | | |
| E-mail: vu2mrb@hotmail.com | | |

**Silent Keys** *(contd)*

Information gathered from Delhi Flying Club indicate that the ex-secretary of ARSI, Amar Bannerji, VU2CZ, was admitted in a Delhi hospital a few months ago and did not survive from whatever disease he was suffering from. No other details are available, since he was not in touch with any Delhi ham for several years.

## HAM RADIO COMPUTER PRINTOUTS AND MAPS

For DX-ers, VHF'ers, Oscar Users, RTTY'ers, Experimenters, CW, Ops, Weather Satellite Users, Home-Brewers, Intruder Watchers, Transmitter Hunters, Repeater Operators, SWL's, etc.

These printouts are invaluable additions to your shack, and there is one for almost every purpose. They also make excellent, inexpensive gifts for your ham friends (we'll send them directly to the addresses you provide, and include a note saying who the gift is from).

### Great Circle World Maps

These are not a printouts, but actual maps drawn by the computer, using an azimuthal equidistant projection, as described in the ARRL Handbook, ARRL Antenna Book, and ARRL Operating Manual. Until now, these maps were available centered on just a few of the largest cities in the world. If you didn't live in one of those cities, you either did without or you used a map whose center was in error by as much as a thousand miles or more. Now you can

have a map drawn by the computer for your exact QTH. The maps are drawn by the computer on 11 by 14 inch (28 by 35 cm) paper, using a state-of-the-art over-size professional series ink jet printer. In addition to geographical information, the map shows all major political (country) boundaries. In order to avoid clutter, and to eliminate the problems caused by ever-changing radio prefixes, geographical place names and radio prefixes are not put on the maps. NOTE: These maps are personalized with your call sign. Please include your call sign with your order. If you don't have a call sign, the computer can put your name on the map, up to a maximum of 24 characters and spaces. $20.00, postpaid via First Class/Air Mail, worldwide.

### DX Beam Heading Charts- Great Circle Bearing Charts

This printout is custom-made by the computer for your exact QTH. It gives the great circle bearing in degrees from your QTH to each of 660 distant locations. Also shown are the distances (in miles and kilometers), as well as the Return Bearings for the 660 locations on the chart. The Return Bearing is the bearing that the distant station sets his antenna on to point at you, and is not a simple 180° difference from your own bearing, but instead must be calculated through the use of spherical trigonometry. The computer does all this for you, and you get 6 double-column pages of printout. The 660 locations on the chart are evenly divided between DX and U.S.A. locations. The DX section is listed in alphabetical order according to radio prefix and the U.S. section is listed alphabetically by state and city. Even if you don't have a beam at your own station you can tell the other guy where to set his antenna for maximum signal both ways! This chart was first introduced in 1966, and in all these years no one else has ever come out with a competitive chart that comes anywhere near ours in size, quality, or bargain-basement price! $12.00, postpaid via First Class/Air Mail, worldwide.

### Super DX Beam Heading Charts

Custom-made by the computer for your exact QTH. The format is exactly like the regular DX Beam Heading Charts (see description above), but is much larger (over 1300 locations), and contains DX listings only (listed alphabetically according to radio prefix). 12 double-column pages. This is the ultimate DX Beam Heading Chart for all DX-ers. $20.00, postpaid via First Class/Air Mail, worldwide.

### Super U.S.A. Beam Heading Charts

Custom-made by the computer for your exact QTH. The format is exactly like the regular DX Beam Heading Chart (see description above), but is many times larger and lists U.S. cities only (over 2600 cities listed). 24 double-column pages. This monstrous chart is a treasure-trove of data for HF work, VHF DX-ers, and repeater operators. $28.00, postpaid via First Class/Air Mail, worldwide.

### Super Foxhunt/Intruder-Watch DX Beam Heading Chart

Custom-made by the computer for your exact QTH. This printout is exactly like the Super DX Beam Heading Chart (see description above), except that the 1300+ locations are listed in numerical order, according to the great circle bearing. When you hear a strange or unidentified signal, swing your antenna until the signal peaks at a maximum and look up that bearing on this chart. The chart will tell you all of the countries and major cities that lie in that direction, as well as their distances. This is the perfect operating aid for tracking down pirates, bootleggers, and broadcast station intruders. $20.00, postpaid via First Class/Air Mail, worldwide.

### Short-Form U.S.A. Foxhunt/Intruder-Watch Beam Heading Chart

Custom-made by the computer for your exact QTH. This chart is just like the Super Foxhunt chart described above, but it lists U.S.A. locations only and is somewhat smaller, with a total of 330 locations. $10.00, postpaid via First Class/Air Mail, worldwide.

### Super Combo Foxhunt Beam Heading Chart

Custom-made by the computer for your exact QTH. This chart is just like the Super Foxhunt (DX) chart and the Short-Form U.S.A. Foxhunt chart, except that both the DX and the U.S.A. locations are integrated into one chart, for a total of 1650 locations. Most users prefer to have the two separate foxhunt charts, but there are some applications where it is advantageous to have all locations integrated into a single chart. $25.00, postpaid via First Class/Air Mail, worldwide.

### Satellite TV (TVRO) Analysis Package

You've seen the ads claiming that you can receive 75 to 200 channels free, including HBO, Showtime, Superstations, etc. Well, it's true, but not just anywhere. Those ads are written to sell expensive equipment which you might not even be able to use. This computer analysis of your exact location gives antenna pointing angles (azimuth and elevation) and signal loss figures for every geostationary satellite location in one-degree increments of longitude. Now you can know for sure, before you spend your money on equipment. $20.00, postpaid via First Class/Air Mail, worldwide.

### Antenna Rotator Mounting Fixtures and Hardware

We have fabricating machinery to manufacture custom fixtures for mounting antenna rotators in towers of all types. If you have special requirements for mounting your an-

tenna rotor, send us a detailed drawing to obtain a cost estimate for manufacturing your custom fixture. (Note: We manufacture fixtures only for mounting on towers. We do not modify towers.)

## ORDERING INFORMATION

These computer maps and printouts for ham radio are produces and mailed by volunteer help. To assist us, please do the following when you send your order:

1 State exactly which printouts and/ or maps you want.

2 Include the name of the town that each printout or map is to be centered on. If it is a rural area, or a town of less than 10,000 population, please describe the location carefully so that you latitude and longitude may be determined. If you know your exact latitude and longitude- obtainable from a GPS receiver, map, etc.- you can provide that information to us, and we'll use those exact figures.

3 Include the proper remittance. Costs shown are effective as of September 9, 1998. Overseas orders must be paid by cheque in U.S. funds drawn on a U.S. bank, or by international postal money order, or by equivalent means. International Reply Coupons (IRC's) may be substituted at the rate of 50 cents per IRC. **QUALITY DISCOUNT: On orders of $40.00 or more, take 5% discount. Orders of $50 or more, take 10% discount.**

4 Include your name and mailing address. If possible, also include a self-adhesive mailing label with the same information on it, as this will speed up the processing of your order. Include your call sign on orders for the great circle world maps.

5 Send your order to:

**Bill Johnston, K5ZI**
**P.O.Box 640**
**Organ, NM 8805**
**U.S.A**

# Bits, Bauds & Bandwidth

## By Phil Cadman, G4JCP, reprinted by courtesy *ShortWave Magazine*, Sept '98

**I was prompted to write this feature by the apparent confusion between the terms 'bits per second' and 'baud rate.' However, rather than simply defining the two terms, I thought a more in-depth look at data transmission may be useful.**

### The Bit

Let's clear one thing up straight away, the bit, short for binary digit, is actually a measure of information. For example, a message telling of the outcome of a flipping of a coin has an information content of one bit.

This is for two reasons; either the message will always be just one of two possibilities-either heads or tails; or there is an equal probability of a heads or tails result. (Unless, of course, you have a dodgy coin).

That last remark is not as flippant as it sounds. In order for the message's information content to equal exactly one bit, a heads result must be equally as probable as a tails result. Put another way, if a message tells of one of two, equally probable, events the information content of that message is equal to one bit.

A formula exists for determining the information content of a message which tells of events that have more than two possible outcomes and when the probabilities of each outcome are not the same. The example above is simply a special case of the general situation.

Binary digits are usually denoted by the numbers '1' and '0'. '1' is usually regarded as 'true' and '0' as 'false'. To communicate the result of one throw of a coin we can ask the question "was it heads?" If the answer is 'yes', then that answer can be represented by the symbol '1', meaning true. An answer of 'no' can be represented by a '0', meaning false. This also demonstrates one other vitally important thing about encoding: both sender and recipient have to agree on the meaning of each symbol beforehand.

Imagine the coin is flipped ten times per second. In order to communicate the results, a channel that can pass information (data) at a rate of ten bits per second is required.

### Baud Rate

Before defining baud rate, let's look at the characteristics of a real channel. By channel, I mean a telephone line, a radio link, a fibre optic link, even two empty baked bean cans connected by a piece of string. Any channel over which information can flow.

In order for the symbols '1' and '0' (representing heads or tails) to be passed over a real channel they also have to be represented by a physical quantity. That quantity may be voltage, current, tones of different frequencies, for instance. I'll choose a voltage of +12V to represent a '1' and a voltage of 0V to represent a '0'.

To communicate ten throws per second these symbols have to be sent at a rate of ten per second, as shown in **Fig.1**. If, by chance, alternate throws give an alternating heads-tails-heads-tails pattern, then the voltage will change ten times per second. In fact, it will look just like a square wave, as the last few throws in **Fig. 1** demonstrate.

Now is the time to tell you that baud rate is simply the number of symbols communicated per second.In this example, ten symbols are sent every second. That makes the symbol rate equal to ten baud. We don't say ten bauds per second because the term baud already includes the 'per second' qualification.

Because each symbol represents one bit (a binary signal) the data rate is also equal to ten bits per second. This point is most important- it is only over a binary channel that the baud rate is numerically equal to the bit rate.

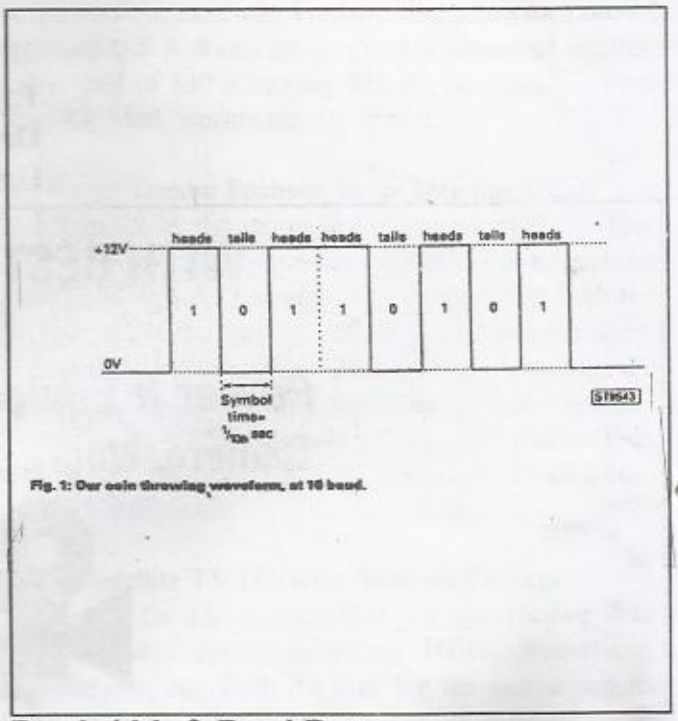



Fig. 1: Our coin throwing waveform, at 10 baud.

### Bandwidth & Baud Rate

Take a rather idealized telephone channel as an example. It possesses two very important parameters; its bandwidth (b.w.) and its signal to noise ratio (s.n.r).

This telephone channel will easily pass symbols at a rate of 10 baud and the far-end voltage waveform will look very sharp, as in **Fig 1.** Telephone-types please note, I'm assuming, for arguments sake, that the frequency response of this telephone connection extends down to d.c.

If the symbol rate is increased sufficiently then the time taken for the voltage to change from one level to another will become significant compared with the symbol

time. The reason the voltage cannot change instantaneously is because the channel has a finite bandwidth.

Things could get mathematical now but instead, imagine sending the symbols at 6000 baud. At the transmitter, the signal will look all nice and sharp, as in **Fig 2a.** All that's changed from **Fig 1** is the symbol time from 1/10th of a second down to 1/6000th of a second.

In the worse case, 6000 baud can give rise to 6000 changes in voltage per second. That's equivalent to a frequency of half that, 3000 cycles per second or 3000Hz.

Assuming the telephone channel has a bandwidth of 3000Hz, the signal will look rather like that shown in **Fig 2b** once it has passed over the channel. It now resembles a 3000Hz sine-wave. That's understandable because the telephone channel is going to behave like a 3000Hz low-pass filter.

If you are familiar with Fourier analysis then you'll know that a 3000Hz square-wave consists of a 3000Hz sine-wave plus a series of odd-order harmonics. If passed through a 3000Hz low-pass filter all the harmonics will be filtered off leaving just the fundamental sine-wave.

If the symbol rate is increased beyond 6000 baud then the channel will begin to attenuate the fundamental signal as well as all the harmonics. Depending on the rate of attenuation beyond 3000Hz, the signal will eventually be attenuated so much so that the symbols will be detected incorrectly.

Varying a voltage to represent the symbols '0' and '1' is called amplitude shift keying (a.s.k.). I could have chosen to vary the frequency of a tone. That's called frequency shift keying (f.s.k.). Finally, there's phase shift keying (p.s.k.) when it's the phase of a tone which represents the symbols.

For example, using f.s.k., a tone of 1200Hz could represent a '0' and a tone of 2400Hz could represent '1'. Even so, the theoretical maximum symbol rate would still be 6000 baud-twice the channel bandwidth.

## Multi-level Signalling

If the symbol rate over a telephone channel is limited to the relatively low figure of 6000 baud, how do modems manage 28800 bits per second and above? The answer to that is for each symbol to have more than two possibilities. I'll use the coin throwing analogy to illustrate the point.

Instead of asking just one question- is it heads? - the results of two successive throws are used to answer a multipart question. The table in **Fig.3** shows all the possible results of two consecutive throws. Each individual throw still gives a 0 or 1 result but this time four symbols, the letters a, b, c and d, represent the four possible outcomes of any pair of throws.

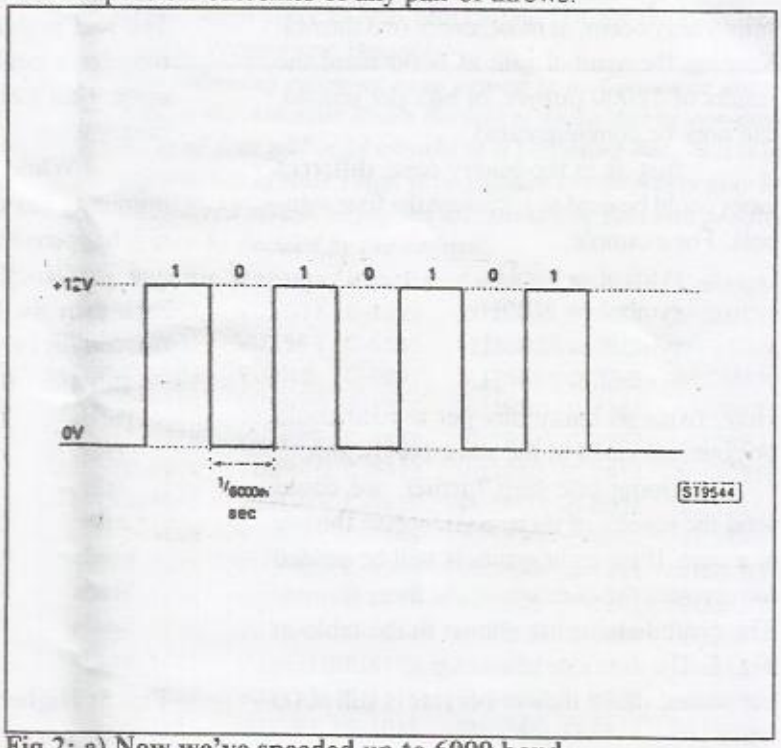



**Fig 2: a) Now we've speeded up to 6000 baud.**
**b) The 'real-world' signal via a phone line.**

| Second Throw | First Throw | Binary Representation | Symbol | Voltage (V) |
|---|---|---|---|---|
| tails | tails | 00 | a | +4 |
| tails | tails | 01 | b | +4 |
| heads | tails | 10 | c | +8 |
| heads | heads | 11 | d | +12 |

ST9547

**Fig 3: Encoding to improve the amount of data that can be transmitted in the same bandwidth.**

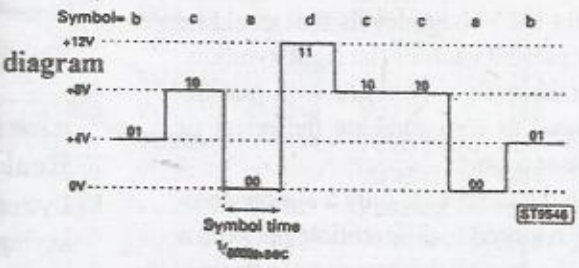



**Fig 4: Resulting multi-level waveform.**

Each symbol now represents two bits of information. If a varying voltage is again used to represent these new symbols then four voltage levels, as shown in **Fig.4,** are needed.

**Fig.4** also shows how voltage transitions only occur, at most, every two throws. Keeping the symbol rate at 6000 baud the results of 12000 throws, or bits per second, can now be communicated.

Just as in the binary case, different tones could be used to represent the four symbols. For example,

symbol a- 600Hz
symbol b- 1200Hz
symbol c- 1800Hz
symbol d- 2400Hz

Here, twice as many bits per second could be communicated in the same bandwidth.

Going one step further, we could send the results of three consecutive throws at a time. If so, eight symbols will be needed to represent the outcome of the three throws. The combinations are shown in the table in **Fig. 5.** The data rate is now up to 18000 bits per second whilst the symbol rate is still 6000 baud.

You should have guessed by now that the data rate is equal to the number of bits of information that are encoded into each symbol multiplied by the number of symbols communicated every second. In this last case three throws are encoded into each symbol- three bits per symbol- and the symbol rate is 6000 baud. Multiplying 3 by 6000 gives 18000 bits per second. Encoding four throws (four bits) per symbol (needing 16 different symbols) would give a data rate of 24000 bits per second and so on.

## Signal To Noise Ratio

If all this seems too good to be true then you'd be right. In the table in **Fig.5,** the last column shows the voltage levels that could be used to represent each of the eight symbols. Compare those eight voltages with just the two required to communicate the result of one throw at a time.

In the latter case only a simple comparator is required to differentiate between a '0' and a '1'. Just set the comparator to compare the input voltage to a fixed +6V reference. If the voltage is lower than +6V then take it as a '0' (0V) and if it's above +6V then take it as a '1' (+12V). Even if the channel were noisy it would take a noise spike of 6V or more to move the 0V level up above +6V or the +12V level down below +6V.

When there are eight voltage levels, seven comparators are needed (and a bit of logic) to identify the transmitted voltage level. Actually, the number of comparators and the associated logic is no great hardship. The real problem is the small difference in voltage levels. It now only requires a noise spike of about 0.85V (half the step size) to cause an error. That's only a seventh of the 6V required to produce an error in the binary case.

While the data rate has gone up by a factor of three the noise immunity has gone down by a factor of seven. This loss of noise immunity happens regardless of how the symbols are physically encoded; voltage, frequency, phase or whatever. The more levels a multi-level system uses then the higher the channel's signal to noise ratio has to be for (essentially) error-free communication.

| Third Throw | Second Throw | First Throw | Binary Representation | Symbol | Voltage (v) |
|---|---|---|---|---|---|
| tails | tails | tails | 000 | a | 0 |
| tails | tails | heads | 001 | b | +1.71 |
| tails | heads | tails | 011 | d | +5.14 |
| heads | tails | tails | 100 | e | +6.86 |
| heads | tails | heads | 101 | f | +8.57 |
| heads | heads | tails | 110 | g | +10.29 |
| heads | heads | heads | 111 | h | +12 |

**Fig. 5: Higher level of encoding, 3-level.**

## Hybrid Systems

Rather than varying just one physical quantity in order to represent the symbols in multi-level system there is nothing to stop there being two (or more) varying quantities. For example, instead of having eight voltage levels, I could pick a series of four tones, each of which could have two voltage levels. This is an extension of the 4-level f.s.k. case above. The combination could be as shown in **Fig.6.**

| Symbol | Freq. (Hz). | Amplitude (V). |
|---|---|---|
| a | 600 | 12 |
| b | 1200 | 12 |
| c | 1800 | 12 |
| d | 2400 | 12 |
| e | 600 | 6 |
| f | 1200 | 6 |
| g | 1800 | 6 |
| h | 2400 | 6 |

**Fig. 6: A 4-level example.**

Of course, the receiver is more complicated because this time it has to detect both the frequency and the amplitude of each tone.

## Real Modems

I've used simple examples, yet similar methods involving frequency shift keying were commonly used until very recently. Indeed, 1200 bits per second over a telephone line was considered fast just a few years ago. Since then, most telephone exchanges have been upgraded to fully digital operation so giving better, more consistent, connections. The incorporation of inexpensive digital signal processing (d.s.p.) within the modems have done the rest.

## Broken Wire Antenna Reporting

**Om Arasu SWL VU-0016**

At the time of going to the press, MUFs were very favourable on many days of May 1999 and very good openings on 14, 18 and 21 MHz bands have come up as a boon to work USA and other American calls for those with less than 50 watts using dipoles/inverted vee antennae. Hope you were one of those.

I Contest activity:

Commonwealth Contest: Several G, VE, 9H, VK, ZL and ZF2NT were QRV. VQ9QM was also there with a big signal. VY2SS was present with a ton of bricks on 14 and 21 MHz. N4AR was MI// NO N4AR and 3B8/G3PJT this time. Of course, all these on CW only.

Grid Locator Contest: The only VU, who was QRV in this new contest was VU3VLH, who may be a OK op on reciprocal licencing, with a good signal from ML88. He may notch up a mark at world level. Best wishes to him.

SP DX Contest: Instead of the two alpha SPPA district Id, this year we could hear all SP stations giving only a single alpha district Id. Thus, there may be new set of rules for Polska award. SQ9 and SOo were very QRV.

Holyland Contest: Many squares were activated by the regular mobile operations in this contest by 4X4JU, 4X4KK, 4X1VF, 4X1KS, 4X2Z etc., G3WQU was QQRV from J 18 BL, the only Bethlehem station heard from that region. E41/OK1DTP was very WQRV from the K 10 JN (Jenin) on all bands, and had a pile up because of the first time operation of a station with E4 prefix in the Holyland Contest.

CQ-M Contest: New prefixes RI9, RJ9, RP3, RP4, EM7, EO5, ER9, UPo, UF3, YTo were heard. 4K54V was also there on all the bands.

II Islands on the Air: VK8AN/6 from OC 154 on 14 CW and VK8NSB from OC 141 on 28 SSB were QRV. 3B8/DL2HZM was on 21 CW from Mauritius.

General: Those from China who were QRV were BA4EG; BD8TG and BD5WW on 21, 18 and 14 MHz CW. 3W7TK on 21 CW; 4K6GF on 28 CW; EG5A on 14 CW were also there. A 43 FTR Op Wahab was QRV in a rally on 28 SSB. Others heard were EY9/RA300 on 21 CW and V31JP on 21 CW itself.

III Awards: VU3DJQ Om Raman and VU2UR Om Arasu were issued wall paper for the CQ-M 1998 Contest in SSB and CW modes respectively. Yes, contest bug is occasionally biting the SWL type of ops only. Others appear to be immune to it. Hi.

Under the guidance and help of the bearded Om Harkirat VU3HKQ, VU2UR could get his Holyland Award No.190 dated 10 Jan 99 (Courtesy of Om Dam 4X1SK who sponsored it) This is an award par excellence. This is a special plaque issued by Israel Amateur Radio Club, on gold anodized aluminium sheet of size 44 x 32 cm silk epoxy printed in two colours, showing an old panorama of Jerusalem as seen from the Mount of Olives. The award manager is 4X4JU Om Malik Webman, who goes mobile frequently, to help with those who are aiming at this lovely award. Watch out in the week ends on 142645 kHz from 12oo UTC, when you can hear him calling DX for the Holyland Award Programme. Best 73.

***The following callsigns have ceased to be Corporate members of the Amateur Radio Society of India due to non-payment of fees within 24 months of it becoming due. This is in accordance of Rule 19(e). If they desire to rejoin they may be considered afresh or pay all the arrears of fees and penalty as may be decided by the council.***

| Mem No. | Callsign | Mem No. | Callsign | Mem No. | Callsign |
|---|---|---|---|---|---|
| C-0061 | VU2GYK | C-1029 | VU2HAR | C-1021 | VU2HCL |
| C-0131 | VU2SFY | C-0536 | VU2SMB | C-1071 | VU2SUW |
| C-0530 | VU2HG | C-0991 | VU2SZU | C-0346 | VU2MKK |
| C-1166 | VU2NPD | C-1376 | VU2NSD | C-1361 | VU2PKZ |
| C-0616 | VU2PPP | C-0432 | VU2RAI | C-1357 | VU2RBJ |
| C-0614 | VU2RCD | C-0913 | VU3CBJ | C-0914 | VU3CBM |
| C-1007 | VU3DRB | C-0926 | VU3FCX | C-0938 | VU3JNA |
| C-1008 | VU3KBA | C-0948 | VU3KMG | C-0950 | VU3KTM |
| C-0974 | VU2PNC | C-0250 | VU2RAK | C-1206 | VU2RDX |
| C-1035 | VU2RHX | C-0979 | VU2RJB | C-0982 | VU2RRC |
| C-0115 | VU2SA | C-1052 | VU2SEM | C-0998 | VU2XTL |
| C-1085 | VU2XTO | C-1155 | VU2YBZ | C-1115 | VU3ASH |
| C-1002 | VU2VAT | C-1111 | VU2VMZ | C-0278 | VU2VPR |
| C-1051 | VU2VSC | C-1011 | VU3PAC | C-0972 | VU3PLN |
| C-1012 | VU3PSL | C-0984 | VU3RTG | C-1017 | VU3USA |
| C-1097 | VU3VKS | C-1369 | VU2AJV | C-0255 | VU2ATN |
| C-1023 | VU2MBM | C-1193 | VU2MKT | C-1010 | VU2MOL |
| C-0961 | VU2NHS | C-1061 | VU2FPR | C-1054 | VU2GOY |
| C-1144 | VU2GPL | C-1068 | VU2GPS | C-1063 | VU2KNU |
| C-1220 | VU2KOO | C-0509 | VU2LMN | C-1160 | VU2MAU |
| C-0964 | VU2NOZ | C-0060 | VU2OO | C-1173 | VU2PKW |
| C-0637 | VU2PMP | C-1102 | VU2IJX | C-1222 | VU2IW |
| C-1131 | VU2JIM | C-0937 | VU2JJQ | C-1118 | VU2TNA |
| C-0517 | VU2TTC | C-1216 | VU2TVX | C-1129 | VU2USF |
| C-1125 | VU2CSM | C-1058 | VU2CYX | C-1400 | VU2EOJ |
| C-1251 | VU2EXA | C-1130 | VU3SPQ | C-1015 | VU3SSW |
| C-1019 | VU3STO | C-1020 | VU3TVK | C-1153 | VU3MAN |
| C-1154 | VU3MAU | C-1093 | VU3MJY | C-0958 | VU3MPK |
| C-1167 | VU2AVG | C-0909 | VU2BIT | C-0438 | VU2BO |
| C-1001 | VU2CMB | C-1207 | VU2ACO | C-1070 | VU2ADC |
| C-0092 | VU2AFR | C-1121 | VU2ASH | C-1211 | VU2JVR |
| C-0789 | VU2JYY | C-1250 | VU2KAK | C-1114 | VU2KND |
| C-1214 | VU2GFX | C-0360 | VU2IN | C-1031 | VU2JEL |
| C-0452 | VU2KAR | C-1259 | VU3JUS | C-1243 | VU3KMR |
| C-1213 | VU3JPG | C-1319 | VU2BZY | C-1090 | VU2DBM |
| C-1274 | VU2DHC | C-1134 | VU2DOM | C-1337 | VU3BHO |
| C-1230 | VU3BJD | C-1325 | VU3BVL | C-1084 | VU3GVR |
| C-1349 | VU2BEL | C-1327 | VU2BGZ | C-1228 | VU2BRC |
| C-1240 | VU2BSY | C-1355 | VU2KGK | C-1244 | VU2KJT |
| C-1399 | VU2KQS | C-1086 | VU2KVB | C-1373 | VU2RJW |
| C-1226 | VU2RPF | C-1013 | VU2RPM | C-1324 | VU2SKD |
| C-1380 | VU2SNK | C-0990 | VU2SUA | C-0062 | VU2SV |
| C-0889 | VU2VWN | | | | |

**If any of the above members have paid their fees, kindly intimate the office with details of rece ipts and amounts.**

# FIELD DAY at Kanyana, 13-14 February

by Gurudutt- VU2GPM (E-Mail: eyeball-vip@zetainfotech.com)

This time the experience was unique. Digital Modes proved that there is more in a field day than making contacts and exchanging reports. There was never a dull moment!

**"Kanyana"** is a small village about 40 km south east of Mangalore and our field-day site was a hilly terrain about 150 mts above sea. Though the elevation was not that high, the view was spectacular and VHF access was just incredible.

We started for Kanyana on Saturday morning, armed with all radio and digital equipment we could carry. Chandra-VU2RCT and Murthy-VU2MTT were already there, having rigged up a 6 el yagi pointing Mangalore and were giving us directions on VHF. By afternoon, more arrived and we unloaded and began setting up station. It didn't take us long because Chandra had already done a FB job of arranging and setting up essentials.

An innovative telescopic mast which Rohit-VU2RDQ carries on his 2-wheeler, extended to a full 30 ft hosted our multiband G5RVB antenna through a Pi-transmatch. The bank of batteries and solar panel were hooked up. We turned the dial. It looked like everybody was expecting us!

Our first contact was a thunderous Santosh-VU2OGO who seemed to be omnipresent on all bands at all times! Our boys (and a YL) wasted no time finding their operating positions.

Call it location or propagation, we hit Mysore, Bangalore and Palghat repeaters without sweat. VHF logs flowed. Shortly HF logs would follow. Our boys ragchewed on 40m and then QSYed to 20m.

Sunset on the hills was dramatic. But the next few hours, we had to live without the sun. Chandra, with his village instincts, worked up a kerosene-gas light and coaxed some candlepower out of it. It would last for the night. Though we had CFL bulbs, we decided to conserve every electron in the battery.

Late in the night, we had visitors- 25 to 30 of them. They were from a nearby village. Surprisingly, most were YLs! It seemed they just got curious of the faint light on top of the hill which was otherwise deserted. Chandra explained to them what our boys were doing up the hill late in the night. Their OMs were hovering in the background. I snapped a photo of the nocturnal visitors with a digital camera. The picture showed up on the computer screen and evoked more surprise. I immediately got QRV for SSTV operation. They were told their picture would be sent to Europe and back.

We had problems. Though we expected the area to be free of electrical QRM, our own monitor was sending QRN on the SSTV frequencies. The next few minutes we spent on QRN busting. By that time there were no stations on SSTV! No luck. Maybe tomorrow. We QSYed to RTTY. An RTTY contest was in progress. We had our fill and QSYed to Pactor.

Not all our boys turn up for field days. They are either QRL or in DX lands. So we logged into HS0AC BBS, an Internet e-mail gateway and sent e-mails to our boys VU2DXC-Ivan (W-land), VU3SNM-Sasi(9V-land) and others from VU-land narrating our field day activity.

Only digital hams can tell you what an exciting experience it is, to send e-mail without wires from a remote and isolated location.

It was long past midnight and we had our fill of digital QSOs. We went on SSB and bumped into Sabu-VU2ELJ on 20m.He told us that our signal was distorted. It was strange. Both our radios were giving distortion. We spent the next few minutes locating the cause. We later found that our radio connectors were worn out. We finally QSYed from Sabu's frequency when he certified our signal OK. We got back in action. Tea flowed constantly.

1.00 am. The boys show no hint of going horizontal. Murthy had disappeared from the shack. Rohit, hit the bands again and Chetan VU3DMP assisted the DX-itement. When can sanity permit somebody to make an antenna at 1:00am? On a Field day of course! Murthy was doing just that. He was later found outside making a separate 40m antenna in pitch darkness!

The others got a bit of shut-eye. The band condition was slowly going down. We were about to give up, when suddenly around 3:30am Murthy arises, as if sleep-walking and plunders the bands on CW!

I had dozed off with my shirt off, and woke up around 6am with my shirt on!! Chilly winds were blowing. The radio was still on. We went on VHF and checked into Mysore and Bangalore repeaters. VHF logs flowed again.

8:00am was time for breakfast and also the informal MARC chat-net Hegde VU2HEG went QRV at the opening position while we had breakfast.

Stations from North Kerala were buzzing on VHF. We worked everybody we could hear. The sun was climbing fast. We had to close down for a moment to check the battery condition. Murthy re-aligned the solar panel, checked the voltages and swapped the batteries. Soon we were back. This time on digital again.

Problems again. This time the computer crashed and Windows got corrupted. Although we had the installation CDs with us, Windows simply refused to install. Fortunately we had a boot disk and since most Ham programs are DOS based, we were in luck.

On 20mts, the RTTY contest was getting louder. I managed to steal some QSOs. Every now and then we

swung the VHF yagi hoping to find some VHF packeteers specially from Bangalore, but found none.

By lunch time, the log-sheets were brimming, but we were eager for more. After a hearty lunch, we were more relaxed in operation, and the sun shines real bright up there. Thanks to the shamiyana shelter, it really saved the day! During late afternoon, the sun was getting in sideways. The younger group of operators took their positions to scan the bands and the older ones scanned the horizon looking for philosophy and wit and finally settled for humour. Operators had to wear headphones to cut off distraction from humour sessions.

Shortly before 6:00pm we had to call it a day. By 6:00pm all men and machines were loaded for the trip downhill and finally reached home.

End of another successful field day! Were we exhausted? NO WAY!! On our way back, we were planning for the next BIG ONE!

73 and thanks to all hams for your co-operation, vigour, log-entries and passion for the radio!

**De VU2GPM-Guru, for VU2RDO Mangalore Amateur Radio Club**

**Field Day Gear**

| | |
|---|---|
| HF | : Yaesu FT840, FT747 |
| VHF | : IC2100 Base (2) nos, 70W boot, and half-a-dozen handies. |
| DIGITAL | : Kam-Plus, MFJ1276 HF/VHF TNCs, Hamcomm homebrew TNC for Pactor, Packet, CW, RTTY and SSTV. |
| COMPUTER | : Pentium-166 MMX |
| POWER | : 4 large size truck batteries, a UPS (for computer) and a 35W solar panel for daytime charg ing. |
| ANTENNAS | : 5/8 GP 2m antenna, 6el 2m yagi, all band G5RV/PI-transmatch, 40m dipole and other HB por table antennas. (Also Diamond SX -200 SWR/Power meter) |

**Operators:-**

| | |
|---|---|
| 1. VU2HEG- Hegde | 2. VU2RCT- Chandra |
| 3. VU2GPM- Guru | 4. VU2MTT- Murthy |
| 5. VU2RLS- Ronny | 6. VU2RDQ- Rohit |
| 7. VU2RDJ-Sukanya | 8. VU3FEI- Georgy |
| 9. VU3DMP-Chetan | 10.VU2JBM-Jagdish |
| 11.VU2SIO-Sunil | 12. VU3THK-Ravi |

## QSL.NET

**By Prof.K.Venkata Reddy, D.Sc., (VU2BBU)**

This Web Server is owned, operated and provided by Al Waller, K3tkj@qsl.net.

1. It is dedicated with the sole purpose of furthering the abilities and interest of the Amateur Radio community. If you are a licenced Amateur Radio operator you are invited to reserve your free space on this server NOW.
2. After signing up you will receive free E-Mail, with forwarding to your existing service, along with free server space to either move your home page to this server or mirror your existing one.
3. Full FTP capabilities are granted with a separate FTP area. This is provided for the purpose of furthering this great hobby.

The left side of the Home Page has options such as:

1. How to become a HAM
2. Master Index of QSL users
3. Join the WWW.QSL.NET Web-ring
4. Help Page
5. Sign Up for a Free Homepage or E-Mail a/c.
6. E-Mail your questions
7. E-Mail reflectors
8. QSL.Net Message Board
9. Latest System News
10. Stats for Web Server
11. FTP How-to
12. Mac FTP Help
13. Stats for FTP Server
14. Hit Counter Help
15. QSL.NET Supporters
16. Search for QSL.NET Websites
17. Portugese,Spanish & Chinese Languages
18. Acceptance Use Policy

The **Index.html** gives you more about:

1. QSL.NET Frequently Asked Questions
2. How to create a Home Page for QSL.NET
3. How to add a Guest book to your Homepage
4. How to install a Counter or Clock on your page
5. How to "Advanced Counter Tutorial"
6. How to "Load your Web Page to QSL.NET"
7. How to "Sign Up for QTH.Net Mailing List"

There is a HTML Tutor that gives-basic Information, general HTML syntax, and working with text, images, hyperlinks etc.

In the Master Index of QSL.Net Users we can see that several VU2 and VU3 Hams are active and have their Home pages.

This QSL.Net provides Ham's an excellent opportunity to learn the different aspects of starting Home Pages, Upload/Download Ham software developed by them into/from the FTP Server and many more.

## FROM THE SECRETARY'S DESK

**ELECTIONS:** The elections to the Governing Council of the society are due this year. As is the convention that the AGM of the society is held during the Hamfest except for last year, so this year also it will be held at Mysore on the 19th September 1999. The formal notice will be issued in due course. The notification for the elections is issued and the nomination form is also included. This year I hope a lot of young blood will be included in the Governing Council. Members are requested to nominate the young generation, of course with their consent, which is necessary.

**MEMBERS DUES:** It appears that members are not aware that they are members of the society and have to be reminded that they have to pay their annual fees. However all members who are in arrears have been sent individual reminders. Many have responded, but more have ignored the reminder. Let this be a reminder that the fees are due on 1st April each year and have to be paid by the 30th June each year or else a penalty of Rs.10/- will be imposed as per the constitution. So please pay your fees in time to avoid the penalty especially this year since the elections are coming. If you desire to nominate/second/stand and vote in the elections you have to be a paid up member i.e. you should have paid your fees in full by the cut off date declared by the council. The cut off date to be eligible is **15th July 99** as declared in the notification.

**MEMBERSHIP CUM IDENTITY CARDS:** In the last issue of the HRN all **Patron** and **Life Members** were requested to send in their photos (stamp size) for issue of membership cum identity cards. However the printer's devil had stepped in and size was wrongly printed as 30cms by 25 cms. Some members thought that ARSI wanted their photographs of the size for printing of posters HI!! The exact size of the required photos is 30mm by 25mm (stamp size as already stated). But it is regrettable to say only two members have responded with their photos. I also wonder if members do read the magazine at all. But we had some over enthusiastic corporate members that have sent in their photos, which were not required. So dear members of the society please do send in your photos so that the cards could be made as soon as possible. This is a suggestion that had come from some members themselves and they have not responded.

**LIAISON WITH WPC:** Members are aware that Om Sahar, VU2SDN, is taking care of problems in WPC. This facility is available to members of the Society, free of charge. Even though this involves quite a lot of travelling by Sahar, no claims for reimbursement are being made by him on this account. We should therefore help him to reduce his burden, by adhering to a uniform procedure. The members are therefore requested:

- to refer only to those cases where 6 months have passed from the date of result; the minimum information required is a copy of the result sheet.
- to send self-addressed stamped envelope, if a reply is required (there are some decent people who have sent stamps worth 30 to 80 rupees)
- to refer problems of non-members on the specific understanding that they will become members in due course. In recent months, he has received very large volume of queries from members but relating to problems of non-members.
- Bank drafts, form State Bank of India only, should be drawn in favor of "Pay & Accounts (HQ), DOT" and payable at New Delhi Service Branch (Code 7687).
- to invariably quote their WPC reference number, in addition to ARSI membership number, in all letters. It does not help matters by referring to previous correspondence because Om Sahar does not maintain individual files. (whenever a reply is sent by Sahar, WPC file number is given by him for future references)

By following the above, members will not only help their cases but also help Om Sahar to look into their genuine difficulties.

Hope you all are having a great time 73's and 88's

**Adolf B.Shepherd**
**Hony.General Secretary.**

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## FEED BACK

From: Abie Kenneth Alexander <abiealex@dte.vsnl.net.in>
To: VU2ST Saad Ali <oel@giasbm02.vsnl.net.in>
Subject: ARSI QSL Bureau Mumbai

Dear Om Saad Ali,

Recently it was my privilege to visit VU2VIT Om Vittal at his residence in Madras.

The dedication and meticulous attention to detail of Om Vittal impressed me very very much. I realised that our hobby survives on the voluntary and self-less efforts of hams such as Mr.Vittal.

We need to encourage such efforts and provide all support possible.

Mr.Vittal was single-handedly running the Bureau so very efficiently from its inception.

Under the circumstances it is not clear to me (and not only to me but to a large number of hams, excepting possibly the hams from Bombay) why the Bombay Bureau was revived with a new post box address.

Some pertinent queries I would like to raise are:-

In a country of one uniform zone with no separate call areas, do we need 2 bureaus?

As far as external hams and bureaus are concerned, are we not compounding confusion by furnishing two bureau addresses?

Has the service to Hams been improved or augmented by

the second bureau?
The answer to the last is a resounding NO. The functioning of this bureau leaves much to be desired.
Queries are never answered even if SASEs are enclosed.
I have received no QSLs from the Bombay bureau inspite of sending out 2750 QSLs during the last 12 months.
Mr.Vittal has, however, been sending me QSLs on a regular basis. This inspite of the fact after opening the second bureau at Bombay most of the inward QSLs are being received at Bombay and not at Madras.
Where then are the QSLs?
I am told that QSLs are personally handed over at Hamventions. Is that the sole mode of distribution of QSLs as far as Bombay is concerned? What then is the fate of hams who cannot attend such hamventions? Will they never get their QSLs? Will their letters never be answered?
I have been diligently confirming every QSO with a QSL, even if this meant incurring additional expenditure sometimes in QSLing direct to stations or bureaus. And as a result of the extremely unsatisfactory service of Indian bureaus I have been compelled to use the service of a friend in Japan as my QSL Manager.
Did we make this hobby so expensive?
The notoriety of Indians not QSLing is increased by the present style of functioning of the Bombay Bureau.
Was the Bombay bureau set up solely to serve the needs of Bombay hams? Was the service of Mr.Vittal found deficient?
Every ham in India needs to be informed of the answers to these questions.The points raised in discussions on the air regarding the functioning of the Bombay Bureau will not enhance the cause of amateur radio in country. Have you also discussed the matter with Mr.Vittal and enquired about his feelings in the matter?
May I request you, as a senior ham, to kindly take appropriate steps to ensure that the functioning of Bureaus is improved and hams in India, wherever they may be located, are given the same level of access to Bureaus and no unfair advantage, at the cost of other hams, is provided to hams in any one location.
I would request you to publish this letter in the next issue of our magazine and allow hams from all over the country to express their views in the matter.
Yours sincerely,
Abie K.Alexander.

**Editor Replies**

Dear Om Abie,
It was very kind of you to send me the E-mail and put on record the appreciation of the superb work done by the Chennai QSL buro run by Vittal. Surely I fully agree with you that our hobby survives on the voluntary and self-less efforts of a few hams. You have only visited the Chennai buro, but if at all you do get a chance to come to Mumbai please make it a point to also visit the Mumbai QSL buro and then send in your comments or whatever. You have visited Vittal at his home but in Mumbai you will appreciate how far VU2AF, Adolf travels almost every day to look after the buro along with the Associate Editor VU2SWS Sarla. He travels about 22 kms each way at his own expense to serve the members of the society and take care of the buro after all efforts have failed to appoint a QSL manager.This is apart from his various duties as General Secretary of the ARSI, which includes elaborate membership accounts of over 1000 members.
Now to answer your queries as to why the Mumbai buro was revived. It was never revived but was always there from the time of FARSI and was subsequently transferred to the ARSI. The change of the Box number was for easy administrative purpose only. This Buro is not the fancy of the Mumbai hams but for the whole society and existed long before the Chennai buro. You seem to be having a grouse against the Hams of Mumbai for what reason I find difficult to fathom.
In a country as large as our the postal efficiency has been and is still in a very bad shape. Cards have been lost, magazines have not reached members but this buro sees to it that the cards are meticulously sorted and arranged and sent to the members after receiving postage prepaid. If as you claim what is going to be loss to the society if cards are sent to the members and the cost borne by the society. Well a few years we did the very same and incurred an expenditure to the tune about rupees six thousand at a time when we were living on charity. From this buro alone about 100 kgs or more cards have been sent out to members and non-members as well. Now the buro sends about 3 to 4 thousand incoming cards every month. Do you want this society to provide free service to all the hams of the country? Well from the 1st April this year the society has decided to stop the service to non-members of the society as per INTERNATIONAL NORMS and route all outgoing cards through the Chennai buro only.
About the confusion of the hams in foreign countries-there is absolutely no confusion at all. The ARRL and the IARU have been informed and all the member buros have been intimated about the working of the Indian buros run by the society.Definitely the service to the members have been improved and the members at large are very much satisfied with the appreciation being received. Senior members have applauded the working of the Mumbai buro. No envelopes are opened which are addressed to individuals though c/o QSL buro. These are sent to them along with the QSL cards. A very senior ham has commented that in his entire hamming he has never received a sealed envelope containing QSL card and the IRCs. Have you received sealed envelopes from the Chennai buro? You may be a rare individual not satisfied and having a grouse which will be very difficult to remove, leave alone difficult to understand. *(Continued on page 18)*

# OPERATING AWARDS

## (*ARRL Handbook*) VHF/UHF Century Club (VUCC)

The VHF/UHF Century Club Award is awarded for contact with a minimum number of "Maid enhead 2 x 1 grid-square locators per band as indicated below. Grid squares designated by a combination of two letters and two umbers. More information on grid squares can be found in January 1983 *QST*, pp 49-51 (reprint available from HQ on request), *The ARRL WorldGrid Locator Atlas* and the *ARRL Grid Locator for North America* (see latest QST for prices and ordering information). The VUCC certificate and endorsements are available to League members in Canada, the US and possessions, and Puerto Rico, and to other amateur worldwide. Only those contacts dated January 1, 1983 and later are creditable for VUCC purposes. (A VUCC lapel pin is available for a nominal charge of $2 US.)

The minimum number of squares needed to qualify initially for each individual band award is as follows: 50 MHz -100; 144 MHz-100; Satellite-100; 222 MHz-50; 432 MHz-50; 902 MHz-25; 1296 MHz- 25; 2.3 GHz-10; 3.4 GHz-5; 5.7 GHz-5; 10 GHz-5; 24 GHz-5; 47 GHz-5; 75 GHz-5; 119 GHz-5; 142 GHz-5; 241 GHz-5; laser-5. Certificates for 222 and 432 MHz are designated as Half Century, 902 and 1296 MHz as Quarter Century, and those above as SHF Awards. Individual band awards are endorsable in the following increments: 50 and 144 MHz-25 credits; 222 and 432 MHz-10 credits; 902 MHz and above-5 credits. There are no speciality endorsements such as "CW only," etc.

Separate bands are considered as separate awards. No cross-band contacts permitted- except for the Satellite award. No contacts through active "repeater" or satellite devices, or any other power relay methods, are permitted. Contacts with aeronautical mobiles (in the air) *do not* count. Contacts with stations shipboard (located on a body of water) *do* count.

Stations who claim to operate from more than one grid square simultaneously (such as from the intersection of four grid squares) must be physically present in more than one square to give multiple square credit with a single contact. This requires the operator to know precisely where the intersection lines are located and placing the station exactly on the boundary to meet this test. To achieve this precision work requires either current markers permanently in place or the precision work of a professional surveyor. Operators of such stations should be prepared to provide some evidence of meeting this test if called upon to do so. Multiple QSL cards are not required.

For VUCC awards on 50 through 1296 MHz, all contacts must be made from a location or locations within the same grid square or locations in different grid squares no more than 50 miles apart. For SHF awards, contacts must be made from a single location, defined as within a 300-meter-diameter circle.

***Application procedure*** (please follow carefully): Confirmations (QSLs) and application forms (MCS-259 and MCS-260) must be submitted to an approved VHF Awards Manager for certification. ARRL Special Service Clubs appoint VHF Managers whose names are on file at HQ. If you do not know of an Awards Manager in your area, HQ will give you the name of the closest Manager. Do not send cards to HQ.

For the convenience of the Awards Manager in checking cards, applicants may indicate in pencil (pencil *only)* the grid square locator on the address side of cards that do not clearly indicate the grid locator. The applicant affirms that he/she has accurately determined the proper locator from the address information given on the card by signing the affirmation statement on the application.

Cards must be sorted alphabetically by field and numerically from 00 to 99 within that field.

Where it is necessary to mail cards for certification, postage equal to the amount needed to send them must be included for return of cards along with a separate self-addressed mailing label. In addition, US and Canadian applicants will enclose $1 US for any initial application to cover postage and packaging of the certificate. For endorsements, enclose only an SASE with two units of First-Class postage. When mailing cards, registered or certified mail is recommended.

Enclosed with the initial VUCC certificate from HQ will be a photocopy of the original list of grid squares for which the applicant will indicate in red on that photocopy those new grid squares for which credit is sought, and submit cards for certification to an Awards Manager. A new, updated photocopy listing will be returned with the endorsement sticker. Thus, a current list of grid squares worked is always in the hands of the VUCC award holder, available to the VHF Manager during certification, and a permanent historical record always maintained at HQ. Reminder: For initial application enclose $1, and for endorsements enclose an SASE (with two units of postage). For endorsement applications, it is necessary to submit only those MCS-259s that indicate new grid squares worked since the previous submission (indicated in red).

***Disqualification:*** Altered/forged confirmations or fraudulent applications submitted may result in disqualification of the applicant from VUCC participation by action of the ARRL Awards Committee. The applicant

Decisions of the ARRL Awards Committee regarding interpretation of the rules here printed or later amended shall be final.

***Operating Ethics:*** Fair play and good sportsmanship in operating are required of all VUCC members.

### Worked All Continents (WAC)

In recognition of international two-way Amateur Radio communication, the International Amateur Radio Union (IARU) issues Worked All Continents certificates to Amateur Radio Stations of the world. Qualification for the WAC award is based on examination by the International Secretariat, or a Member-Society, of the IARU, that the applicant has received QSL cards from other amateur stations in each of the six continental areas of the world (see the ARRL DXCC Countries List in Chapter 17 for a complete listing of continents). All contacts must be made from the same country or separate territory within the same continental area of the world. All QSL cards (no photocopies) must show the mode and/or band for any endorsement applied for. WAC certificates are issued as follows:

- Basic Certificate (mixed mode)
- CW Certificate
- Phone Certificate
- SSTV Certificate
- RTTY Certificate
- FAX Certificate
- Satellite Certificate
- 5-Band Certificate

WAC endorsement stickers are issued as follows:

- 6-Band Sticker
- QRP Sticker
- 1.8-MHz Sticker
- 3.5-MHz Sticker
- 50-MHz Sticker
- 144-MHz Sticker
- 430-MHz Sticker
- Any higher band

Contacts made on 10/18/24 MHz or via satellites are void for the 5-band certificate and 6-band sticker. All contacts for the QRP sticker must be made on or after January 1, 1985, while running a maximum power of 5-watts output or 10-watts input.

For amateurs in the United States or countries without IARU representation, applications should be sent to the IARU International Secretariat, PO Box AAA, Newington, CT 06111, USA. After verification, the cards will be returned, and the award sent soon afterward. There is no application fee; however, sufficient return postage for the cards, in the form of a self-addressed, stamped envelope or IRCs, is required. US amateurs must have current ARRL membership. [A sample application form and a return-postage chart appear in Chapter 17.] All other applicants must be members of their national Amateur Radio Society affiliated with IARU and must apply through the Society only. Note: The DXCC Countries List in Chapter 17 includes a continent designation for each DXCC country.

### DX Century Club (DXCC)

DXCC is the premier operation award in Amateur Radio. The initial DXCC certificate (a nominal fee of $2 US is charged for the DXCC lapel pin) is available to League members in Canada, the US and possessions, and Puerto Rico, and all amateurs in the rest of the world. There are 12 separate DXCC awards available:

***Mixed*** (general type)- contacts must be made using radiotelephone since November 14, 1945.

***Phone-*** contacts must be made using radiotelephone since November 14, 1945. Confirmations for cross-mode contacts for this award must be dated before October 1, 1981. Confirmations need not indicate two-way (2x) to be credited.

***CW-*** contacts must be made using CW since January 1, 1975. Confirmations for cross-mode contacts for this award must be dated before October 1, 1981. Confirmations need not indicate two-way (2x) to be credited.

***RTTY-*** contacts must be made using radioteletype since November 15, 1945. Confirmations for cross-mode contacts for this award must be dated before October 1, 1981. Confirmations need not indicate two-way (2x) to be credited.

**160** ***meter, 80 meter, 40 meter, 10 meter, 6 meter, 2 meter-*** contacts must be made since November 15, 1945.

***Satellite-*** contacts must be made using satellites since March 1, 1965 (non-endorsable)

### DXCC Fee Schedule

Effective January 1, 1994, all amateurs applying for their very first DXCC Award will be charged a one-time Registration Fee of $10. This same fee applies to both ARRL members and foreign non-members, and both will receive one DXCC certificate and a DXCC pin. Applicants must provide funds for postage charges for QSL return.

(a) A $5 shipping and handling fee will be charged for each additional DXCC certificate issued, whether new or replacement. A DXCC pin will be included with each certificate.

(b) Endorsements and new applications may be presented at ARRL HQ, and at a certain ARRL conventions. When presented in this manner, such applications shall be limited to 110 cards maximum, and a $2 handling charge will apply.

(c) Each ARRL member will be allowed one submission in each calendar year at no cost (except as in [b] above, or return postage). This annual submission may include any number of QSL cards for any number of DXCC Awards, and may be a combination of new and endorsement applications. Fees as in (a) above will apply for additional new DXCC Awards.

(d) Foreign non-members will be allowed the same annual submission as ARRL members, however, they will be charged a $10 DXCC Award fee, in addition to return postage charges. Fees in (a) and (b) may also apply.

(e) DXCC participants who wish to submit more than once per year will be charged a DXCC fee for each additional submission made during the remainder of the calendar year. These fees are dependent upon membership status: ARRL members: $10 foreign non-members: $20. Additionally, return postage must be provided by applicant, and charges from (a) and (b) above may be applied.

Confirmations (QSL cards) must be submitted directly to ARRL HQ for all countries claimed. Confirmations for a total of 100 or more countries must be included with first application. Contacts made on all amateur bands are valid for DXCC. **[Contacts made on 10/18/24 MHz are not valid for 5-Band DXCC.]**

The ARRL DXCC Countries List criteria (see below) will be used in determining what constitutes a "country".

Confirmations must be accompanied by a list of claimed DXCC countries and stations to aid in checking and for future reference (the required DXCC application materials are available from ARRL HQ for an SASE).

Endorsement stickers for affixing to certificates or pins will be awarded as additional credits are granted. For the Mixed, Phone, CW, RTTY and 10-Meter DXCC, these stickers are in exact multiples of 25, i.e., 125, 150, etc., between 250 and 300, and in multiples of 5 above 300 DXCC countries. For 160-Meter, 80-Meter, 40-Meter, 6-Meter, 2-Meter and Satellite DXCC, the stickers are in exact multiples of 10 starting at 100 and multiples of 5 above 200.

All contacts must be made with amateur stations working in the authorized amateur bands or with other stations licensed to work amateurs. Contacts made through "repeater" devices or any other power relay method (aside from Satellite DXCC) are invalid for DXCC credit.

In countries where amateurs are licensed in the normal manner, credit may be claimed only for stations using regular government-assigned call signs or portable call signs where reciprocal agreements exist or the host government has so authorized portable operation. No credit may be claimed for contacts with stations in any country that has temporarily or permanently closed down Amateur Radio operations by special government edict where amateur licenses were formerly issued in the normal manner. Some countries, inspite of such prohibitions, issue authorizations that are acceptable.

All stations must be "land stations." Contacts with ships and boats, anchored or under way, and airborne aircraft, cannot be counted.

All stations must be contacted from the same DXCC country.

All contacts must be made by the same station licensee. However, contact may have been made under different call signs in the same country if the licensee for all was the same.

Any altered, forged or otherwise invalid confirmations submitted by an applicant for DXCC credit may result in disqualification of the applicant. Any holder of a DXCC award submitting altered, forged or otherwise invalid confirmations may forfeit the right to continued DXCC membership. The ARRL Awards Committee shall rule in these matters and may also determine the eligibility of any DXCC applicant who was ever barred from DXCC to reapply, and the conditions for such application.

(a) Fair play and good sportsmanship in operating are required of al DXCC members. In the event of specific objections relative to continued poor operating ethics, an individual may be disqualified from DXCC by action of the ARRL Awards Committee.

(b) Credit for contacts with individuals who have displayed continued poor operating ethics may be disallowed by action of the ARRL Awards Committee.

For (a) and (b) above, "operating" includes confirmation procedures and/or documentation submitted for DXCC accreditation.

Each DXCC applicant must stipulate that he/she has observed all DXCC rules as well as all pertinent governmental regulations established for Amateur Radio in the country or countries concerned, and agrees to be bound by the decisions of the ARRL Awards Committee. Decisions of the ARRL Awards Committee regarding interpretations of the DXCC rules (either currently in effect or later amended) shall be final.

All new DXCC applications must contain sufficient postage in the form of US currency, check or money order. For DXCC endorsements, sufficient funds for return postage is available on request from ARRL HQ (and is reproduced in Chapter 17). ARRL membership is not required of foreign applicants.

Official DXCC application forms are required. These may be obtained from the DXCC Desk at ARRL HQ. Please include a business-size SASE. **The complete DXCC rules appear in Chapter 17.**

### 5BDXCC

A Five-Band DXCC Award has been established to encourage more uniform DX activity throughout the amateur bands, encourage the development of more versatile antenna systems and equipment, provide a challenge for DXers, and enhance amateur-band occupancy. The basis DXCC rules apply, although the starting data for valid QSOs is January 1, 1969.

The 5BDXCC certificate is issued after the applicant submits a minimum of 500 QSLs representing two-way contact with 100 different DXCC countries on each of five Amateur Radio bands. Phone and CW segments of the band do not count as separate bands for this award.

Confirmations made on any legal mode are acceptable, but no cross-mode or cross-band contacts are acceptable. Contacts made on 10/18/24 MHz are not valid for 5BDXCC. All QLS must be checked by the ARRL HQ DXCC Desk. 5BDXCC is endorsable for additional bands: 160 meters, 17 meters, 12 meters, 6 meters, 2 meters. In addition to the 5BDXCC certificate, a 5BDXCC plaque is available at an extra charge of $25.

*Countries List Criteria*

The ARRL DXCC Countries List is the result of progressive changes in DXing since 1945. The full list will not necessarily conform completely with the current criteria since some of the listings were recognized from pre-WW II or were accredited from earlier versions of the criteria. While the general policy has remained the same, specific mileages and additional points have been added to the criteria over the years. The specific mileages in Point 2(a) and Point 3, mentioned in the following criteria, have been used in considerations made April 1960 and after. The specific mileage in Point 2(b) has been used in considerations made April 1963 and after.

When an area in question meets *at least one* of following three points, it is eligible as a separate country listing for the DXCC Countries List. These criteria address considerations by virtue of Government [ Point 1 ] or geographical separation [ Point 2 and 3 ], while Point 4 addresses ineligible areas. All distances are given in statue miles.

***Point 1*, GOVERNMENT**

An independent country or nation-state having *sovereignty* (that is, a body politic or society united together, occupying a definite territory and having a definite population, politically organized and controlled under one exclusive regime, and engaging in foreign relations-including the capacity to carry out obligations of international law and applicable international agreements) constitutes a separate DXCC country by reason of **Government**. They *may* be indicated by membership in the United Nations (UN). However, some nations that possess the attributes of sovereignty are *not* members of the UN, although these nations may have been *recognized* by a number of UN member nations. Recognition is the formal act of one nation committing itself to treat an entity as a sovereign state. There are some entities that have been admitted to the UN that lack the requisite attributes of sovereignty and, as a result, are *not* recognized by a number of UN-member nations.

Other entities which are not totally independent may also be considered for separate DXCC country status by reason of Government. Included are Territories, Protectorates, Dependencies, Associated States, and so on. Such an entity may delegate to another country or international organization a measure of its authority (such as the conduct of its foreign relations in whole or in part, or other functions such as customs, communications or diplomatic protection) *without* such an entity is individually considered, based on all the available facts in the particular case. In making a reasonable determination as to whether a sufficient degree of sovereignty exists for DXCC purposes, the following characteristics (list not necessarily all-inclusive) are taken into consideration:

(a) Membership in specialized agencies of the UN, such as the International Telecommunication Union (ITU).

(b) Authorized use of ITU-assigned call sign prefixes.

(c) Diplomatic relations (entering into international agreements and/or supporting embassies and consulates), and maintaining a standing army.

(d) Regulation of foreign trade and commerce, customs, immigration and licensing (including landing and operating permits), and the issuance of currency and stamps.

An entity that qualifies under Point 1, but consists of two or more separated land areas, will be considered a single DXCC country (since none of these areas alone retains an independent capacity to carry out the obligations of sovereignty), *unless* the areas can qualify under Points 2 or 3.

***Point 2*, SEPARATION BY WATER**

An island or a group of islands which is part of a DXCC country established by reason of **Government**, Point 1, is considered as a separate DXCC country under the following conditions.

(a) The island or islands are situated off shore, geographically separated by a minimum of 225 miles of open water from a continent, another island or group of islands that make up *any part* of the "parent" DXCC country.

For any *additional* island or islands to qualify as an additional separate DXCC country or countries, such must qualify under point 2(b).

(b) This point applies to the "second" island or island grouping geographically separated from the "first" DXCC country created under Point 2(a). For the second island or island grouping to qualify, at least a 500-mile separation of open water from the first is required, as well as meeting the 225-mile requirement of (a) from the "parent". For any subsequent island(s) to qualify, the 500-mile separation would again have to be met. This precludes, for example, using the 225-mile measurement *for each* of several islands from the parent country to make several DXC countries.

***Point 3*, SEPARATION BY ANOTHER DXCC COUNTRY**

(a)Contiguous land mass: Where a country, such as that covered by Point 1, is totally separated by an intervening DXCC country into two areas which are at least 75 miles apart, *two* DXCC countries result. This straight line measurement is made at the closest point, and may include inland lakes and seas (that are part of the country) in the measurement. International waters may be included in the

separation but do not contribute to the 75-mile minimum requirement.

(b) Islands: Where two islands, of the government under Point 1, are totally separated by an intervening DXCC country (also under Point 1), *each* island counts as a separate DXCC country. No minimum distance is required. The test for total separation means that a straight line cannot be drawn from any point on one island to any point on the other island without passing through another DXCC country. This intervening country may be part of either island, another island, or part of a continent.

***Point 4*, INELIGIBLE AREAS**

(a) Any area which is unclaimed or unowned by any recognized government does not count as a separate DXCC country.

(b) Any area which is classified as a Demilitarized Zone, Neutral Zone or Buffer Zone does not count as a separate DXCC country.

(c) The following do not count as a separate DXCC country from the host country: Embassies, consulates and extraterritorial legal entities of any nature, including, but not limited to, monuments, offices of the United Nations agencies or related organizations, other intergovernmental organizations or diplomatic missions.

### A-1 Operator Club (A-1 OP)

Membership in this elite group attests to superior competence and performance in the many facets of Amateur Radio operation: CW, phone, procedures, copying ability, judgment and courtesy. You must be recommended for the certification independently by two amateurs who already are A-1 Ops. This honor is unsolicited; it is earned through the continuous observance of the very highest operating standards.

### Old-Timers' Club (OTC)

In recognition of amateurs who have held an amateur license 20-or-more years (lapses permitted), a suitable award is available- OTC. If you qualify as an "old-timer," you'll find the necessary paperwork pretty easy. Drop a note to HQ (with an SASE) with the date of your first amateur license and your call then and now. HQ will verify the information, and if you're eligible, you'll soon receive your OTC certificate by return mail.

### Contests

The League sponsors exciting on-the-air contests for developing operating skills from 160 meters to 10 GHz, and participation certificates are available for all levels of activity, from casual participation to "all-out war"! Contests are also the "fast-track" way to make those needed QSOs for ARRL awards.

### Plaques

Those who qualify for either 5BWAS and/or 5BDXCC are eligible for a handsome individually engraved 9 x 12-inch walnut plaque. Further info, including required fee is included in the 5BWAS or 5BDXCC application materials.

ARRL International DX Contest Awards Program. Beautiful plaques can be won for specific achievements in the ARRL DX Contest. Details appear in *QST*.

*(contd from page 13)*

The statement that you have not received any QSL cards from the Mumbai buro is questionable. You acknowledged by your letter of 24th August 1998 that you have received the cards sent by the Mumbai buro. If you have sent out 2750 QSLs the Mumbai buro is not to be blamed if no return QSL are forthcoming. How many SASEs have you sent to the Buro and in which SASE did you receive the QSL cards from Mumbai? Is the Mumbai buro to be blamed for the outgoing QSL cards that you claim to have sent at your own expenditure? It is like blaming the government if the rains are not sufficient or forthcoming.

Regarding cards being handed over personally during any Hamvention/meeting-it is the norms that are followed anywhere in the world. Why not? Why tax the member for postage when he can receive his cards at no cost that too not being a member of the society. Well this is not the practice as you seem to understand. It is only if in the next couple of months there is a meet then the cards are carried by someone and distributed to those people who **DO NOT CARE** to answer the call for postage when asked for. Does this society have godown storage space to keep cards of members/non-members who do not care to acknowledge with the postage? Does this society have to keep the cards of hams who do not want their cards unless they contain Green Stamps/IRCs?

I thought you were very much satisfied with the running of the Chennai buro as you have appreciated it so much. Then why do you have to appoint a QSL manager at extra expenditure and why have you to send cards directly with a big drain on your pocket. Well you have taken up an expensive hobby and to keep it going you have to bear it all. You point out about the notoriety of Indians not QSLing, this can be said of the Dx. Hams as well since the inception of the Internet the membership of the societies has been dwindling the world over as per the IARU.

As said earlier this buro is not working for the exclusive use and fancy of the Mumbai hams. This issue has been discussed with Vittal by the council when he visited Mumbai and the question of feelings does not arise. Is this the result of the feelings expressed to you on your visit to his QTH. So far no service was denied to any ham by this society whether member or not. All hams were the same level of access to the buros and no unfair means/advantage has been given to any section/location of hams. You have a very biased mind in this regard and I think it is a fiction of your own making. But then there are limitations as how far to stretch the service and resources by the society hence the need to follow INTERNATIONAL NORMS and stop the service to non-members.

Here again I do not think every ham needs to be informed of matters pertaining to the society and the buros run by it. However the correspondence is being published in order to introduce transparency in the actions of the society and running of QSL Buros.

Here I would invite any constructive suggestions/criticism in regard to the buros and the society from all the members. 73 Yours sincerely,

Saad Ali, VU2ST

Dossu Paymaster VU2NP
Court View, 126 M.K.Road,
Churchgate,
Mumbai 400 020.
31st May 1999

TO ALL MEMBERS OF THE AMATEUR RADIO SOCIETY
**Subject: Elections to the Governing Council 1999-2001**

Having been appointed as Returning Officer by the Governing Council at its meeting held on 9th May 1999 (on air). I hereby request you to follow the procedure and time schedule as detailed below, in accordance with Rule 27 of the Constitution of the ARSI.

1. Notice is hereby given for an Election to the Governing Council to be held on the **19th September, 1999**

2. The Elections are for filing the post of President, Vice President, an Honorary General Secretary, Treasurer and four General Members of the Governing Members of the Governing Council.

3. Nominations of candidates for the above categories must be in the annexed form, (published in HRN- Apr-June) duly proposed by one member and seconded by four members, and must carry the signature of the Nominee also as a token of acceptance.

4. Only Patron, Corporate and Associate members are eligible to stand, propose, second and vote in the election.

5. The Nominee, Proposer and the Seconders shall all be voting members of the society. i.e- They should have paid their fees in full by the **15th July 1999.**

6. Completed Nomination Papers must be received by me at the above address on or before **5th August 1999**

7. Scrutiny of the Nominations shall be completed by the **10th August 1999** and Ballot Papers containing the names of valid nominees will be mailed individually to the members by **17th August 1999**

8. Those who cannot attend the General Body Meeting on the 19th September 1999 can send me their Ballot Papers by post double sealed in two envelopes provided, the outer envelope must carry the name, callsign if any and the signature of the voter, while the plain inner envelope must be unmarked and sealed so as to reach me on or before **11th September 1999**

9. Any alteration, variation or departure from the above procedure shall render the Ballot invalid.

10. All Ballot Papers will be opened, scrutinized and counted with the help of two scrutineers appointed by the Council and the result announced at the General Body Meeting.

11. Each member can propose/second only one person for one post- for instance if a member proposes and/or seconds two names for the single post of Treasurer, his nominations shall stand cancelled for both nominees.

Dossu N.Paymaster
VU2NP
**RETURNING OFFICER**

# AMATEUR RADIO SOCIETY OF INDIA

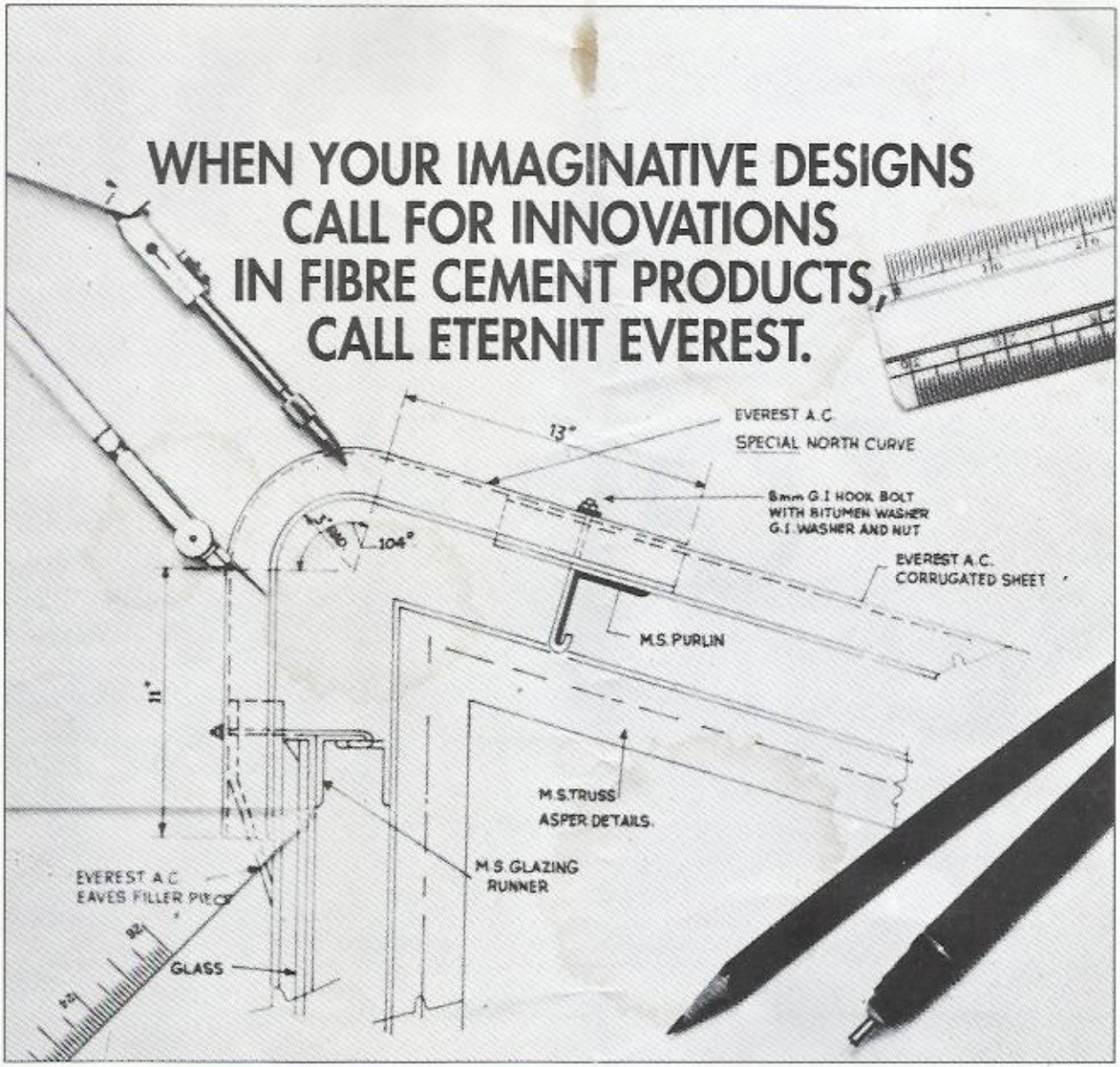
## ELECTIONS TO THE GOVERNING COUNCIL 1999-2001

## FORM OF NOMINATION

| NAME OF POST | NAME OF NOMINEE | CALL SIGN (if any) | SIGNATURE (nominee) |
|---|---|---|---|
| 1. PRESIDENT | | | |
| 2. VICE PRESIDENT | | | |
| 3. HONY.GEN.SECRETARY | | | |
| 4. TREASURER | | | |
| 5. MEMBER | | | |
| 6. MEMBER | | | |
| 7. MEMBER | | | |
| 8. MEMBER | | | |

| | Name | Callsign if any | Signature |
|---|---|---|---|
| 1. Proposed by | | | |
| 2. Seconded by | | | |
| 3. Seconded by | | | |
| 4. Seconded by | | | |

# WHEN YOUR IMAGINATIVE DESIGNS CALL FOR INNOVATIONS IN FIBRE CEMENT PRODUCTS, CALL ETERNIT EVEREST.




## TO CUSTOM-MAKE PRODUCTS FOR YOU.

Take for example Kinetic Honda, Bajaj Auto, Godrej, Telco, and Goodyear. They contacted us not just for standard roofing sheets and accessories. They had more difficult tasks on hand which needed innovative thinking.

We put our R&D and consultancy teams to work and, in practically no time, specific solutions were found.

So, if your design is unique, contact our Customer Service Cell. We will assist you. By offering the widest range and recommending the right kind of roofing sheets and accessories for a complete roofing system. By custom-making products specially for you. And, of course, by ensuring prompt delivery and perfect installation at site through our countrywide network of depots and stockists.

We have a fully equipped R&D Centre, with access to the latest international technology from our parent company. And we've been studying roofing problems for over 60 years. So, when you decide on our roofing sheets you leave all your problems to us.

EVEREST
FIBRE CEMENT PRODUCTS
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