



VU2KGN Nadarajan



VU2LR Satya



VU2GUR Guru



VU2SWS Sarla



VU3RRU Mandraselvan



VU2NDR Dorai

TEAM A7ØR1



VU2WIA Rajan



VU2UR Arasu



VU2VIT Vittal



VU3YFD Prasad



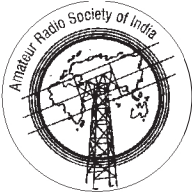
VU2RMJ Ramaraju



VU2FBI Ravi

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HAM

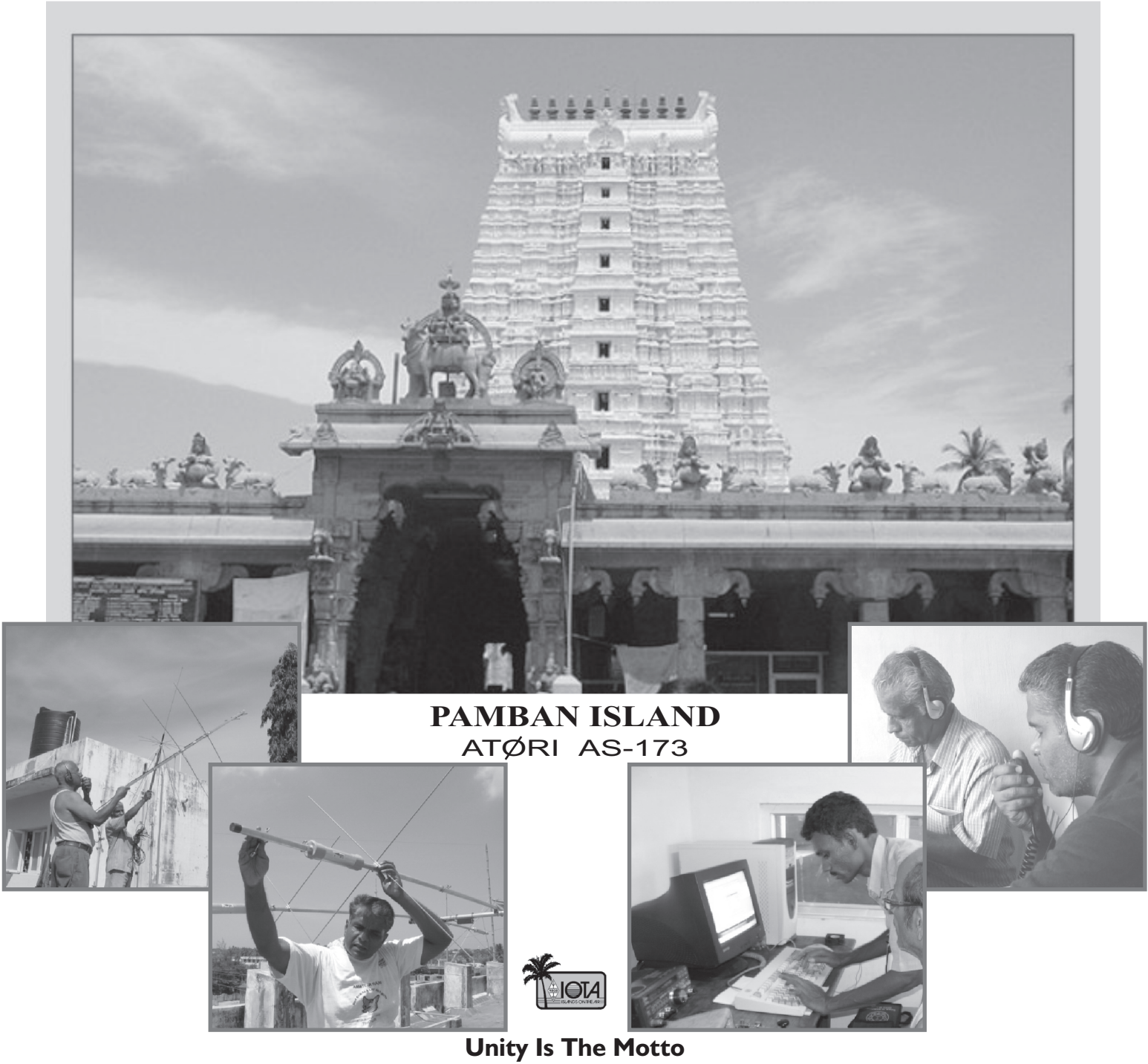


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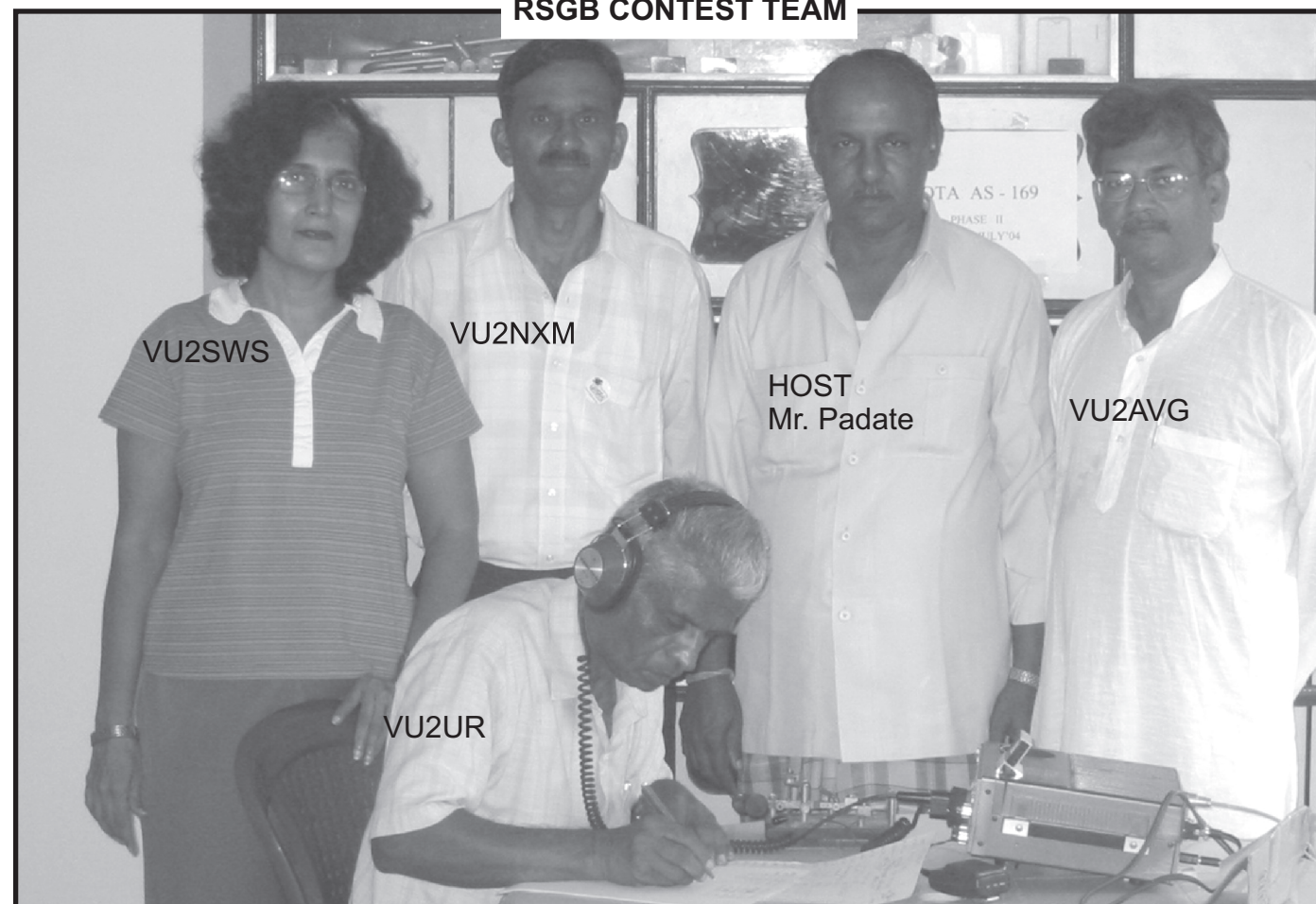
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2 Meter Verticle is a omni directional antenna and can be used with radials. This antenna is ideal for fixed station. It is designed for frequency ranging from 140 Mhz to 175 Mhz.

FEATURES

- Brass base turned to micron tolerances To maintain the precision limits of the loading coil and capacitance
- Gain above 6.8 dBi
- Low VSWR 1.3:1
- Rugged Construction to withstand high wind
- Quick and easy installation
- High mechanical stability

2M-YAGI

2 Meter yagi antenna is designed for Frequency ranging from 144MHz-148MHz and is available in 8-12 elements.

FEATURES

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- Gain above 12 dBi for 12 element and above 10 dBi for 8 element
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This 2682 Boomer is a broad vertically polarized array and this antenna is designed for frequency ranging from 144 Mhz to 148 Mhz

FEATURES

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A sophisticated antenna manufactured to the highest precision, using brass base turned to micron tolerances so that the loading coil and capacitance is maintained within precise limits. Quality-Highest plastic materials assure very low losses. Due to all these and other features the gain of the antenna is above 6.8 Dbi.

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- Weight 900 g

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* G.S.M. INDOOR BOOSTER

806 - 960 Mhz
1700 - 1800 Mhz
Power - 10 m Watts

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Zo - 50 Ohms
Gain - 17 dBi
VSWR < 1.5

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66' HALF POWER BEAM WIDTH
Dual polarization
Frequency 806 - 960 Mhz
Connectors 2 x 7/16 Female
VSWR < 1.5
Impedence - 50 Ohms
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Max power per input 600 watts
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UMS Ten - Tec Transceiver

SPECIFICATION

Frequency range : 143.5 - 148.5 Mhz
Power requirements : 13.5V - DC/ Receive 0.2A Transmit 5A (Max)
Dimensions : H=55.88 cm, W=165.1 cm, L=177
Weight : 1.45 Kg.
RECEIVER
Sensitivity : 0.2 uv or less
Auto output : 2 Watts
Adjacent channel rejection : 70 dBi at 20 kHz offset
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TRANSMITTER
Power output : High 30 W Low 5W
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PRESIDENT'S REPORT



During the last three months I was busy with various activities of the society. For the first time ARSI participated in the IARU championship contest and we had 6 HQ Stations on air. The response from the rest of the world was good and we are making a special qsl card for the occasion.

Enroute to Tokyo for the IARU regional director's conference, I visited China between the 11th and 18th of August. Chinese Amateur Radio Activity is developing very fast. As against very few amateur radio license holders 15 yrs ago, now there are nearly 10,000. During my stay there, I was able to attend their national championship of amateur radio. This year the championship was held in Nanjing and was restricted to primary and secondary school children. The contest was for ability to receive and transmit messages under stimulated conditions of disaster. I will be writing an article on amateur radio activities in China, which will be published in the next HRN issue.

At the IARU regional directors' conference in Tokyo, amateur radio activities in the region was discussed. One of the main items was about expanding the amateur band in 40Mtr upto 7.3 MHz. On principle the International organization (ITU) has agreed to release the bandwidth up to 7.2 MHz. In some countries in the region this has already been implemented. In India, we have to approach the government regarding this. It may take some time as there are many commercial stations in this frequency. The directors also discussed the possibilities of increasing the membership for IARU Region-III. The countries in view are Nepal and Maldives. I will be contacting the amateur radio corporations in these countries regarding this.

With the festive season coming on I wish all of you, Happy festivities.

73, Chandru

Call Book India 2005

The Indian Institute of Hams, Bangalore proposes to release Call Book India 2005. All hams are requested to send their name, call sign, QSL info, Landline No., Licence No., Email address etc along with photograph to :

The Director,

Indian Institute of Hams,
No. 42, 3rd Main, Maruthi Housing Layout,
Vasanthapura, Bangalore - 560061.

CQ ALL VU HAMS



Greetings!! The festive season is about to begin in VU land. We hams have a lot to celebrate, what with 2 island activations and other activities by groups and individuals which has caught the attention of the world and made us proud.

HRN has had its share of brickbats and bouquets. It is with a heavy heart that we have decided NOT to use the Indian map as a background for the page numbers. This decision was taken after a lot of qrm caused by individuals in various yahoogroups on the internet, which I am sure has made VU hams the laughing stock in the eyes of the ham community of the world.!!!

When I became the editor of HRN, I studied various ham magazines of the world. Each magazine projected its country's identity and I decided that the Indian Map should be included somewhere in the HRN. So a map available on the internet was taken and miniaturized and used. Soon this one gentleman ham pointed out that the map was wrong. I requested the same gentleman to give me the map he thought was right which of course he didn't. On top of that he threatens to resign from ARSI and complain to the Surveyor General of India!!!! I of course would have sought legal protection and I told him so. 2 issues of HRN later, this affair was again raked up in the same yahoogroup site with more hams joining in the fray. ARSI and the HRN editor were termed as unpatriotic and we were subjected to all sorts of insinuations continuously, inspite of us maintaining a dignified silence.

The decision to put the map in the magazine was done out of patriotic feeling. It would have been wonderful if the qrm group could have given me the correct map and I would have used it. What is more patriotic, publishing your country's map in your country's magazine or making sure that it is removed???? Is patriotism limited to only saluting the flag and the map and talking about the valour of our soldiers in our borders? Doesn't patriotism include living in harmony with your fellow countrymen and trying to understand their situation instead of just pointing out their so called mistakes???? Doesn't patriotism include keeping your country's dignity in the eyes of the rest of the world? Does the rest of the world need to know about the petty rivalries between clubs and individuals in VU? Can any one individual claim to be more patriotic than the next?

The qrm causers can now crown themselves as the greatest of patriots, but we at ARSI believe in keeping the dignity of our country in the eyes of the world and feel that so much energy and qrm wasted on a map is not worth it. We believe in putting all our efforts in producing a good, readyworthy magazine. And that by us, is patriotic enough. Jaihind.

OFFICE BEARERS

President : IARU Liaison Officer & Awards Manager:

R. Ramchandra VU2RCR (Chandru) 488, 14th Main, 3rd Block,
Koramangala, Bangalore - 560034 / LL, (080) 2553 6853 /
Cell 080 31820213/ Email :rcr@vsnl.com

Vice President: Ms Sarla Sharma, 7,Gaurav Apts, Behind
Ashok Nagar, Nahur, Mulund (West) Mumbai 400080
LL, (022) 25682361 / 98211 66411

E.Mail:coilnrs@bom3.vsnl.net.in or sarla_sharma@hotmail.com

General Secretary: G. Govind VU2GGM 406,
Padmanabha Nagar, Bangalore- 560070, LL, (080) 2669 2465

Treasurer: K. Ravindran VU2RC (Ravi) 95, Rainbow Drive,
Sarjapur Road, Bangalore - 560035. LL,(080) 28441588 /
Cell 09886228800 /Email : kinetic@asia.com

Editor: Ms. Sarla Sharma

QSL Manager: D.P.Dey, VU2DPD, 5s, Moore Avenue,
Kolkata-700040 LL 24114719.

QSL Bureau: P.O.Box 17116, Kolkata -700033.

The current address of the society is

ARSI, P. O. Box No. 3462, Bangalore -560034.

PAYMENT INSTRUCTIONS

All payments to be made by draft in the name of ARSI payable in Bangalore. Money Order can be sent to the above address. No payments by cheques please.

Note: To Members of the ARSI news group

If you have not received email from the newsgroup for some time, it may be due to your email has or had been bouncing in any one of the Yahoo egroups and you did not reply to the "reactivation" message from Yahoo groups. Until you reply to the reactivation message your account with yahoo groups is suspended. To insure that you don't miss any announcements from any yahoo group please reply to the reactivation message from Yahoo groups immediately and keep your mailbox free to accept more mail. ARSI news group page is at

<http://groups.yahoo.com/group/ARSI>

To Subscribe: ARSI-subscribe@yahoogroups.com

To Unsubscribe: ARSI-unsubscribe@yahoogroups.com

Please send any submissions to arsimail@vsnl.net

73 Raj VU2ZAP Moderator ARSI newsgroup

W.P.C Address (Temporary) : Asst. Wireless Adviser,
Government of India, Ministry of Communications &
Information Technology, Department of Telecommunications,
WPC Wing, Amateur Section, Room No. 521, Sanchar
Bhavan, New Delhi 110001.

Mr.Irshad Ahmed is the Engineer looking after Amateur Radio matters. His Ph. No : 011-2303 6181. Fax No.: 011-2371 6111

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<u>Membership</u>	<u>Admission</u>	<u>Annual</u>
Category	Fees(Rs)	Fees(Rs)
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Corporate member)	2250	Nil
Life *	2450	Nil
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or Institution with Licence)	100	200
Associate (Individual, no		
Licence required)	50	75
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Inside Half Page	Rs. 700	(B & W)

SATELLITE NEWS

AO-51 (AMSAT-Echo) will be turned on for general use in FM repeat mode on 30 July 2004 at about 0215 UTC. This will be for a trial period of about three weeks during which the command stations will be watching the power budget and adjusting the UHF transmitter B power as needed for good management of the battery. Initially, the transmitter will be running at about 1W. If power allows, it will be slowly increased during the trial period. We will also be adjusting settings on the satellite, so if the signal changes slightly from time to time, do not be alarmed. The TXB transmitter will be on 435.300 MHz, which is also a trial frequency. The original frequency of 435.225 MHz is now in regular use by GO-32, so the alternate is being tested to see if it can be used long term. To work Echo in this mode you need the following information: Uplink: 145.920 MHz FM voice with 67 Hz PL. Downlink: 435.300 MHz FM voice. The downlink transmitter will come on when it hears an uplink signal with a 67 Hz PL tone for about 1 second. It stays on for 10 seconds after that signal goes away. This operation is just like a terrestrial FM repeater with a 1 second kerchunk filter and a 10 second hang time. The command stations will be watching the AMSAT-BB email reflector for report of how Echo is working. Please post your results there. We are most interested in hearing about how well Echo hears you and how well you hear it. Note that Echo is still wobbling a great deal and the polarization sense of the downlink will vary. The B UHF TX is nominally RHCP in the northern hemisphere but this will change over the duration of a pass due to wobble and orientation relative to the ground

station. Transmitter A will generally continue to operate on 435.150 but may be at reduced power at times, or may be at about 1W only when the command stations are gathering Whole Orbit Data (WOD) telemetry. We will be analyzing the WOD for information about how much TX B is on and how the power system is behaving. Please note that the digital transponder and the store and forward BBS, are NOT yet open for general use. TX A may also switch to 38k4 from time to time to facilitate downloading large files. We expect Echo will be heavily used in these first few days. Many stations will be trying to make a contact through Echo. It is good amateur practice and common courtesy to let everyone have a chance. Echo will hear you as well as or better than any previous amateur FM repeater satellite. With the downlink transmitter at 1W you will need a small directional antenna to hear it. Especially in these first few days, always listen first. Even though the downlink will only come on when it hears an uplink signal, with hundreds of stations trying it out we expect the transmitter to be on continuously when over populated areas. So again, listen first, and be courteous to let everyone have a chance at making a contact via AO-51. And a reminder, this is a trial period of the FM voice repeat function. The digital portion of Echo is NOT yet open for use. Echo Command Team, Jim White, WD0E, Mike Kingery, KE4AZN

(By the time this goes on print, Hams are already listening and talking on Echo!!!....Editor)

AWARDS INFO

The MARKONI 100 Award is available to all amateurs worldwide who submit three QSL cards as confirmation of having contacted three Montenegrins radio amateur stations with special prefixes in period between 01. July 31. August 2004. year, or one QSL card as confirmation of having contacted with memorial radio station 4O6100BB. In addition, endorsement stickers are available as listed below.

Endorsement stickers for the basic mixed mode/band award are available for SSB, CW any single band. The GOLD endorsement is available for the applicant who has worked 10 stations with special prefixes, including memorial station 4O6100BB. QRP is defined as 10 watts input (or 5 watts output) of the applicant only and is affirmed by signature of the applicant on the application. Applications with QSL cards and 10 IRCs or 10E have to be sent to award manager YT6A. For each endorsement stickers you have to sent 3 IRCs or 3E. Ranko Boca, YT6A, Nikole Ljubibratica 78, Herceg Novi 85340 Montenegro, SiCG List with all applicants will be daily update on www.yt6a.com

ARSI gives a very beautiful Award and most VU Hams qualify easily. All you have to do is check out from the following table and know how to score each QSO. Then, make out a log of all

the VU stations you have worked and score the log with the proper points and achieve a total of OVER 100 points.

Band.	vu2/vu3	vu4/vu7	all AT0,AT2 etc
160mb	3	5	4
80	2	4	3
40	2	4	3
20/15/10	1	3	2

QSOs in WARC bands and /p, /m, /mm, /am QSOs are not allowed. Fee of 5 IRCs. Get the log verified by two other amateurs or your Club Official and forward it to the awards manager:

B.L.Manohar Arasau VU2UR, MIG-6 80 Feet Road, Kengeri Upanagara, Bangalore 560060

Tel: 080 2848 2680

GREECE: 2004 Summer Olympics Award Series

The Greek R.A.A.G. has the certificates featuring historic images of sports events from the country which originated the Olympics. Check out

www.dxawards.com/inet2004.htm.

COVER STORY

ATØRI Pamban island activated!!!! .. by VU2SWS, YL Sarla

After the activation of Elephanta island, the bug of island activation seems to have caught on in VU land. Pamban island in south India was activated between the 23rd and 30th of August 2004. Rameswaram town in the island has all the modern amenities, but had to wait awhile before being activated!! The activation was a group effort between the Amateur Wireless Association of Rameswaram(AWAR) and hams from all over India.

The AWAR was repeatedly goaded into activity by VU2UR, OM Arasu and VU2NDR, OM Dorai in the past four years. The time came when VU2VIT, OM Vittal and VU2RMJ, OM Ramaraju took up the cause and started a regular net on 7.070 kHz. Announcements were made regarding the plan of action and all those interested were asked to submit their licence copies for permission from the WPC. This being done, the WPC was approached and the dates 23rd to 31st August 2004 was sanctioned and the special call ATØRI approved.

The first group to arrive on the 22nd from Tirupur were VU2WIA, OM Rajan, VU2UR, OM Arasu, VU2GUR, OM Guru and VU3YFD, OM(young) Prasad. They came by road armed with loads of equipment. On reaching in the evening, they immediately started to erect the antennae and by midnight, the inverted Vees were ready for operation. When they gave their first call on 40metres, CW, they were pounced upon by the expecting island chasers on the air and soon 120 Qsos were logged!!! The group then rested and on the break of day, the 23rd, they got down to erecting the MA5B, Cushcraft and G5RV antennae. OM Rajan, though visually challenged did a fantastic job of erecting the yagi all by himself and it was a treat to watch him in action. OM Guru and Prasad erected the G5RV antenna.

Soon they were joined by the rest of the group namely VU2VIT, (Vittal), VU2NDR, (Dorai), VU2FBI(Ravi), VU2RRU (Mandraselvam), VU2LR(Satya), VU2RMJ(Ramaraju), VU2KGN (Nadarajan). There were 2 stations, one at the Taluka Office and the other at the guest house. The Taluka office station was manned mainly by OM Arasu and Rajan, in CW and SSB modes respectively and the satellite set up was totally OM Guru's turf, who wouldn't even eat his meals in case he missed the satellite passing!!! The guest house station was the seat of young man Prasad, who incidently is a computer expert and operated digital mode on PSK31 and SSTV non stop. His log showed the maximum number of countries worked!! On the 26th, VUSWS, YL Sarla from Mumbai and VU2JHM, OM Ajay from Bangalore arrived on the island. Sarla operated as a guest operator and used her skills in tackling the huge pile.

On the 28th of August 2004, a demonstration plus an awareness programme of Hamradio was organized by the

AWAR. The district collector and the DIG of Ramanathapuram district graced the programme with their presence. All the hams present were asked to speak a few words to enlighten the school children who were present there in large numbers. The gathering was then shown a demonstration of all the modes of operation and the kids thoroughly enjoyed SSTV. OM Satya, VU2LR had homebrewed a small receiver, the working of which he explained to the children. Hams from nearby places attended the function in large numbers. This programme was covered by the print and tv media.

This activation saw around 2500 qsos being logged with 85 countries. There were huge pile ups from European island chasers, as usual, and the crew did their best to separate and identify the stations to QSO amidst the pile up and total disorder. There were attempts to call by split frequency method, area wise, country wise calling technique, but, all seemed to fail at the pileup. Very strict directional CQs to NA, SA, JA was not pleasing the European island chasers, but, there was no other go but to resort to that method. This definitely got a few W, VE, PY, HR, HK QSOs, and those operators were certainly happy that they were called and listened to, carefully. The Europeans had the lions share of the QSOs completed. For the first time, there were effective QSOs in PSK31 and SSTV to many DX countries. In the 2m front, the Kodaikanal repeater could be accessed and a few VUs worked. In the Satellite mode, VU2POP and 3SXE from Bangalore were the successful ones to have had QSOs with OM Guru at ATØRI.

Kudos goes to all who took part in this operation. Special mention must be made about OM Rajan, who not only set up a fantastic antenna system and bought so much of equipment from his home qth, but also made endless trips on his Mahindra Bolero, ferrying all present around. One must not forget the back office work done by the husband and wife duo of OM Venkatraman(VU2BVM) and Sharada from Madurai, who, though didn't take part in the activation, tirelessly entertained all hams traveling through Madurai to reach Rameswaram.

Equipment used in ATØRI: Kenwood TS 440S, TS 140, Yaesu FT 757 GX MKII, Base station Yaesu 3000M, Antennae: Cushcraft MA5B with portable mast designed by VU2WIA, G5RV, Dipoles for 40,20,15, Diamond antenna for UHF/VHF, Magmount and Mobile whip, FT 901 antenna coupler,, FC757 automatic antenna tuner, Bug Key and Kutsmi electronic keyer for cw, Yaesu FT 102 external speaker, power supplies Kenwood PS 40 and Icom PS 60, cooling fans, PC with homebred interface for digital mode, HB9CV for satellite, SWR meter SX600, Heil boom Microphone with footswitch.

.....

BITX is an easily assembled transceiver for the beginner with very good performance. It uses ordinary electronic components and improvises where specific components like toroids are not available. It has a minimum number of coils to be wound. All alignment is non-critical and easily achieved even without sophisticated equipment. A regular VOM meter is enough to test the rig. The entire instructions to assemble the rig are given here along with relevant theory.

BITX evolved over one year from the excellent S7C receiver described in the new ARRL book 'Experimental Methods in RF Design' into a bi-directional transceiver. Several hams across the globe contributed to its design. I am greatly indebted to OM Wes Hayward (W7ZOI) for his time and effort. He performed a number of theoretical calculations for this rig and encouraged me to strive for higher performance from this little transceiver. His advice over email has been invaluable.

Development Notes

Almost all modes of wireless communications share a natural principle that the receivers and transmitters operate using the same line-up of circuit blocks except that the signal direction is reversed. The CW direct conversion transceiver is the simplest illustration of this principle. A more complex example is the SSB transceiver.

Bi-directional SSB transceivers have been quite common in amateur literature. A transceiver was described in the ARRL SSB Handbook using bipolar transistors. W7UDM's design of bidirectional amplifier (as the basis of bidirectional transceiver) is referred to by Hayward and DeMaw in their book Solid State Design. The bidirectional circuitry is often complex and not approachable by the experimenter with modest capability (like me).

The broad band bi-directional amplifier

My current interest in bidirectional transceivers arose after looking at an RC coupled bidirectional amplifier in the book Experimental Methods in RF Design (p. 6.61). I didn't have PNP transistors in my junk box, and the design required low voltage (to prevent reverse emitter-base junction breakdown of the passive transistor). Thus, I began investigating a simple amplifier block that I use in most of my work (Fig 1).

In any bipolar transistor, the current flowing from the collector to emitter is a multiple of the current flowing from the base to the emitter. Thus, if there is a small change in the current flowing into the base, there is a bigger change in the current flowing into the collector. What follows is a highly simplified explanation of working of the above amplifier.

In the above circuit, imagine that a small RF signal is applied through Rin to the base of Q1. Also imagine that the RF voltage is swinging up. The transistor will accordingly amplify and increase collector current causing more current to flow through the RL (220 ohms) collector load. This will in turn drop the voltage at the collector. The drop in voltage across the collector will also

result in a drop at the base (base voltage is a fraction of the collector voltage due to the way the base is biased). This circuit will finally find balance when the increase in base current flowing from Rin is balanced by the decrease in base current due to the voltage drop across RL. In effect the RF current entering from Rin flows out through the feedback resistance, the RF impedance seen at the base is effectively very low and the signal source will see an approximate input impedance of Rin.

Thus, $V_{in}/R_{in} = V_{out}/R_f$ (Eq. 1)

Another factor to consider is that that emitter is not at ground. At RF, it looks like there is a 10 ohms resistor between the emitter and the ground. Thus, when the base voltage swings, the emitter will follow it. The RF voltage variations across the Re (10 ohms) will be more or less the same as that across the base. The current flowing into the emitter will mostly consist of collector current (and very little base current). Thus, if the emitter current almost equals collector current,

$I_e = V_{in}/R_e = V_{out}/R_L$ (Eq. 2)

We can combine these two equations to arrive at:

$V_{out}/V_{in} = R_f/R_{in} = R_L/R_e$. (Eq. 3)

This is an important equation. It means several things. Especially if you just consider this part:

$R_f/R_{in} = R_L/R_e$. (Eq 4)

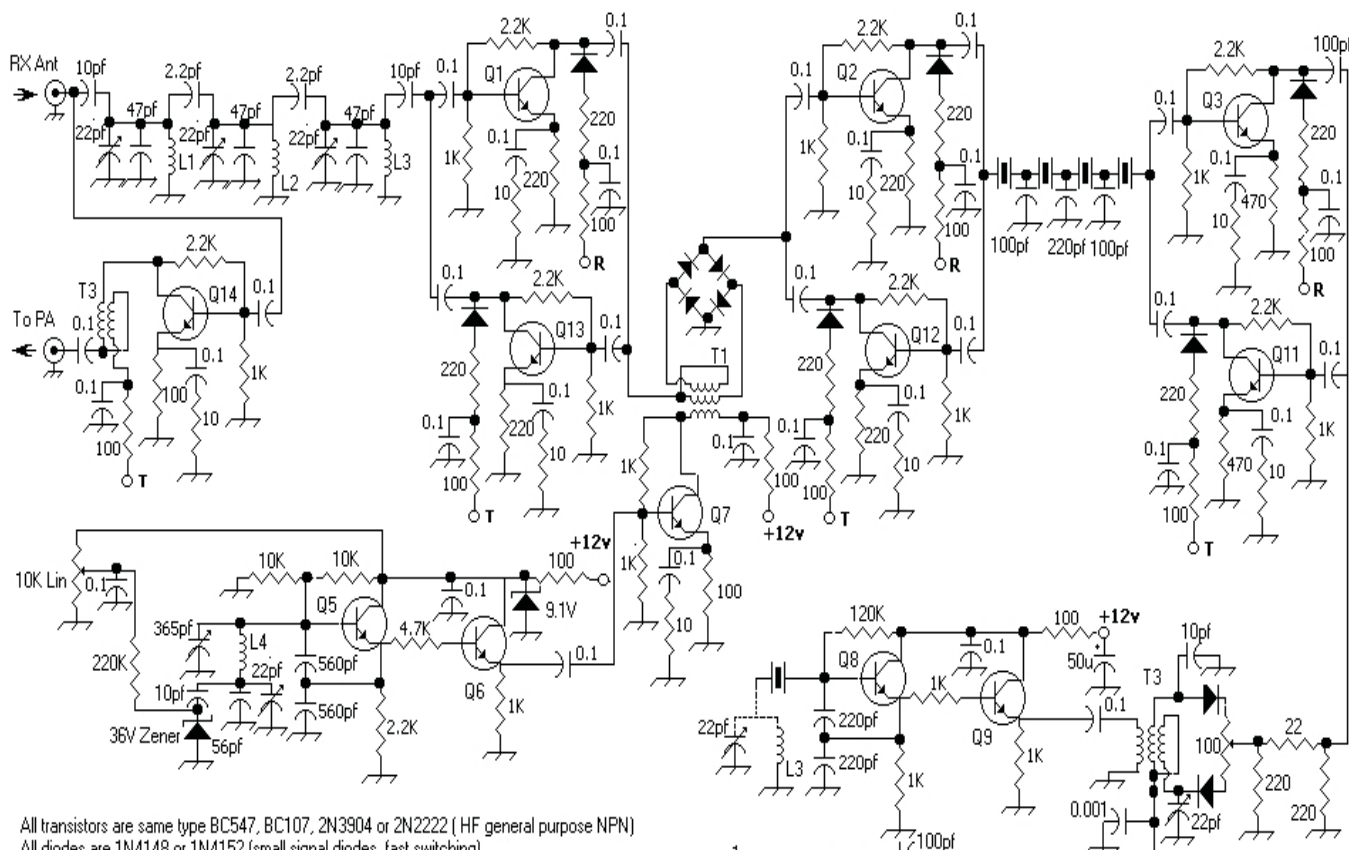
Let's look at some interesting things:

1. The voltage gain, and the input and output impedances are all related to resistor values and do not depend upon individual transistor characteristics. We only assume that the transistor gain is sufficiently high throughout the frequencies of our interest. The precise value of the transistor characteristics will only limit the upper frequency of usable bandwidth of such an amplifier. This is a useful property and it means that we can substitute one transistor for another.

2. The power gain is not a function of a particular transistor type. We use much lower gain than possible if the transistor was running flat out. But the gain is controlled at all frequencies for this amplifier. This means that this amplifier will be unconditionally stable (it won't exhibit unusual gain at difference frequencies).

3. You can restate the eq 3 as $R_f * R_e = R_L * R_{in}$. That would mean that for a given fixed value of Rf and Re, the output impedance and input impedances are interdependent. Increasing one decreases the other and vice versa! For instance, in figure 1, Rf = 1000, Re = 10, if we have Rin of 50 ohms, the output impedance will be $(1000 * 10)/50 = 200$ ohms. Conversely, if we have an Rin of 200 ohms, the output impedance will be 50 ohms!

In order to make bidirectional amplifiers, we strap two such amplifiers together, back to back. By applying power to either of amplifiers, we can control the direction of amplification. This is the topology used in the signal chain of the transceiver. The



All transistors are same type BC547, BC107, 2N3904 or 2N2222 (HF general purpose NPN)
 All diodes are 1N4148 or 1N4152 (small signal diodes, fast switching)
 All capacitors are in microfarads, except where noted as pf
 All resistors are 1/4Watt
 All crystals are 10 MHz (My crystals were made by KDS)
 IC1 LM386-N1

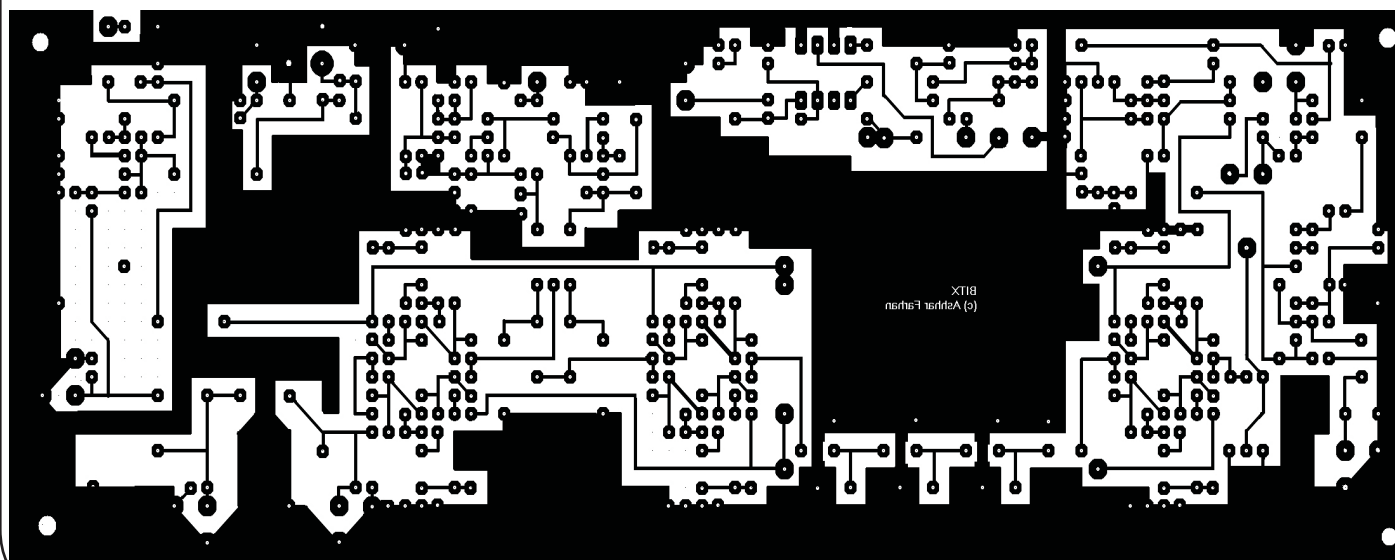
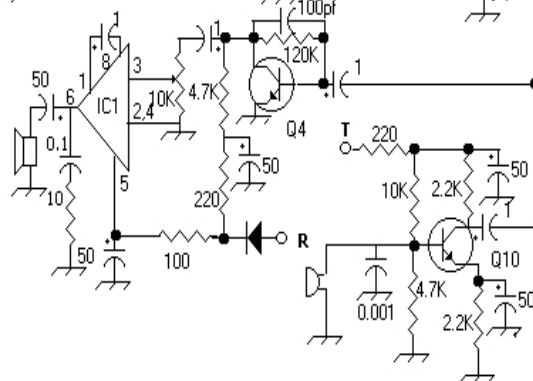
L1, L2, L3: 2uH, 36 turns of 28 swg over nylon tap washer
 L3: 5uH, 70 turns of 32 swg over nylon tap washer (may vary with BFO crystal type)
 L4: 20uH, wind 150 turns of 32 swg over nylon tap washer.

T1, T2: 13 turns of trifilar winding on TV balun core with 32swg wire
 T3: 13 turns of bifilar winding on TV balun core with 32swg wire

Although all amplifiers look the same, some have different component values.
 Check the list of important differences.

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 don't change anything and reproduce both together.



diodes in the collectors prevent the switched-off transistor's collector resistor (220 ohms) from loading the input of the other transistor. A close look will reveal that the AC feedback resistance consists of two 2.2K resistors in parallel, bringing the effective feedback resistance to 1.1K. Thus, the above analysis holds true for all the three stages of bidirectional amplification.

Diode mixers

The diode mixers are inherently broadband and bidirectional in nature. This is good and bad. It is good because the design is non-critical and putting 8 turns or 20 turns on the mixer transformer will not make much of a difference to the performance except at the edges of the entire spectrum of operation.

The badness is a little tougher to explain. Imagine that the output of a hypothetical mixer is being fed to the next stage that is not properly tuned to the output frequency. In such a case, the output of the mixer cannot be transferred and it remains in the mixer. Ordinarily, if the mixer was a FET or a bipolar device, it usually just heats up the output coils. In case of diode ring mixers, you should remember that these devices are capable of taking input and outputs from any port, hence the IF output gets back into the mixer and mixes up once more creating a terrible mess in terms of generating whistles, weird signals and distorting the original signal by stamping all over it.

A simple LC band pass filter that immediately follows the diode ring mixer will do a good job only at the frequencies it is tuned to. At other frequencies, it will offer reactive impedance that can cause the above mentioned problems. It is always a good idea to follow up and feed diode ring mixers with properly broadband termination. Using broad-band amplifiers is a good and modest way of ensuring this. A diplexer and a hybrid coupling network is a better way, but it would be too complex for this design.

Circuit Description

Although simple, every effort was made to coax as much performance as was possible given the limitations of keeping the circuit simple and affordable.

The Receiver

The RF front-end uses a triple band-pass filter for a very image and IF rejection. The three poles of filtering are quite adequate and the image response of the receiver is only limited by external shielding and stray pickups.

An RF amplifier follows the RF band pass filter (Q1) biased for modest current. More current would have required a costlier transistor. There is 8mA through the RF amplifier and the post-mix amplifiers to keep the signal handling capacity of the circuit above average. The Post-mix amplifier (Q2) does the job of keeping the crystal filter as well as the diode mixer properly terminated. The crispness of the receiver is more due to this stage than anything else. An improper post-mix amplifier easily degrades the crystal filter's shape and introduces spurious signals and whistles from the diode mixer. Note that the mixer is singly balanced and the 10MHz IF can breakthrough if the mixer is not properly terminated or if the RF input pre-selection is not

strong enough.

The VFO is fed via a broad-band amplifier into the singly balanced mixer. We used the simplest VFO possible with a two-knob tuning mechanism. It works really well and for those (like me) used to quick tuning, it offers best of both worlds, slow tuning through the varactor and fast tuning through the capacitor without any slow motion drive. Getting a slow motion drive is an increasingly difficult problem.

A word about VFOs: depending upon component availability, skills and preferences, every body has a favourite VFO circuit. Feel free to use what you have. Just keep the output of at the collector of Q7 to less than 1.5 volts (it will appear clipped on the oscilloscope trace, that is okay). For 20 Meters operation, you will need a VFO that covers 4 to 4.4MHz. The given VFO has low noise though it does drift a little, but I have had no problems with ordinary QSOs. A Hartley oscillator using a FET like BFW10 or U310 would work much better. You can substitute this VFO with any other design that you might want to use. If you are using the given PCB layout, then skip the VFO on board if you want to use a different VFO and build it externally in a separate box.

The simple IF amplifier has a fixed gain. Earlier it was noted that IF amp was contributing noise at audio frequencies. It was later traced to noise from the power supply and placing a 50uF on the transceiver power line has cured it. The IF amplifier has a 100pf output coupling to provide roll-off for audio frequencies.

The BFO is a plain RC coupled crystal oscillator with an emitter follower. The emitter follower has been biased to 6V to prevent limiting.

The detector also doubles up as the modulator during transmit mode; hence it is properly terminated with an attenuator pad. It has no impact on the overall noise figure as there is enough gain before the detector. The audio pre-amplifier is a single stage audio amplifier. The 220pf capacitor across the base and collector provides for low frequency response.

The receiver does not have an AGC. This is not a major shortcoming. Manual gain control allows you to control the noise floor of the receiver and I personally find it very useful when searching for weak signals or turning it down to enjoy the local ragchew.

Transmitter

The microphone amplifier is DC coupled to the microphone. This was done to steal some DC bias that is required when using a Personal Computer type of headset. If your microphone does not require any bias, then insert a 1uF in series with the microphone. The microphone amplifier is a simple single stage audio amplifier. It does not have any bandpass shaping components as the SSB filter ahead will take care of it all.

The two diode balanced modulator uses resistive as well as reactive balancing. A fixed 10pf on one side of the modulator is balanced precisely by a variable 22pf on the other side. A 100 ohms, mini preset allows for resistive carrier balance. The attenuator pad at the output was found necessary to properly terminate the diode modulator and keep the carrier leakage around the IF amplifier to a minimum. While this may seem excessive, it produces a clean DSB with carrier nearly 50db down

with careful adjustments on the oscilloscope.

Rest of the transmission circuitry is exactly the same as the receiver. There is an extra stage of amplification (Q14) to boost the very low level 14MHz SSB signal from output of the microphone tip to driver input level.

The output amplifier boosts the SSB signal to 300mV level, enough to directly drive a driver stage.

The Power Chain

A simple power chain consisting of two low power NPN transistors in parallel (for increased power) drive an IRF510 for 6 watts of power at 14MHz. The output of IRF510 uses a tap washer as an output transformer. The output transformer has 40 turns of bifilar winding; these can lead to enough stray capacitance to affect proper performance as a transformer. The half-wave filter that follows the transformer absorbs these capacitances as a part of the matching network.

I used this power chain because it works for me and delivers 6 watts on 14MHz. I don't use more power because I neither require more nor do I have a power supply that can source more. If you need more power, there are a number of things that you can do, you can simply increase the supply voltage on the IRF510 up to 30 volts and extract nearly 15 watts of power from the same configuration. At 30 volts, the drain output will be at 30 ohms impedance and the pi-network will have to be designed to directly match the drain to a 50 ohms antenna load. Alternatively, you could try two IRF510s in push-pull. These are variations that you can play with. A word of warning though, The RF energy at these levels can give you a serious RF burn. RF burns can be more painful than fire or steam burns. QRP is not only fun, it is also safe for clumsy fingers like me.

Construction

I would highly recommend that you construct it over a plain copper clad board by soldering the grounded end of the components to the copper and the other ends of components to each other. Look at the pictures to see how it has been done.

For those who feel intimidated by this 'ugly' method, I have designed a PCB. The PCB layout (component side) is provided with this article. It is a single sided PCB with wide tracks that can be easily made in the home lab. I am making a run of these PCBs but shipping them abroad (outside India) maybe a problem. Drop a mail to me if you are planning to make some PCBs, I can put your contact information on the website. There are no copyrights over either the PCB, the circuit or even this article, feel free to copy and distribute. The rest this part is for those using the PCB to assemble the rig.

The circuit board is laid out in a long line, it is 8-1/2 inch long and 2-1/2 inch wide. The board circuit board is a little big for the circuit that goes onto it. This was done so that the board is non-critical and it works well. All the bidirectional amplifiers are similarly laid out.

When you get your PCBs, inspect them thoroughly, preferable in the sun light. Check for small cracks in the tracks. Check for tracks that might be touching each other or touching the ground plane. The PCB layout was done to minimize this, but check it anyway. Especially check for the tracks that run diagonally to the base of

each transistor in the bidirectional circuitry. These are laid out very closely and they are candidates for shorting.

Almost all assembling instructions ask you to solder the transistors in the end. I would highly recommend that you solder the transistors and the diodes first. You are most alert when you start a project and if you place the transistors correctly, the rest of the circuit can be soldered around it. Be very careful about orientation of the transistors. The microphone transistor faces in a direction opposite to the rest of the transistors and the transistor pairs in bidirectional amplifiers face each other. The diodes have a ring to indicate which way their 'arrow' is pointing.

After the transistors are soldered, finish the BFO. If you are assembling this for 14MHz and above, the BFO will need a coil in series with the crystal (USB mode), if you are need LSB operation, you will need a trimmer instead (see the schematic). Apply power to the BFO and you should be able to hear it on your Short wave broadcast radio around 31 meter band. It will sound like a silent radio station. It should be quite strong. Switching the BFO power supply on and off will help you identify your BFO signal on the radio. If you have an RF probe, or an oscilloscope, you should be able to see the oscillations. Expect RF of 2 volts or more.

Next, assemble the VFO. Winding 150 turns of the VFO coil is one of the most tedious jobs while assembling this rig. It has to be done, so just dig in and do it. You don't have to attach the 365 pf tuning capacitor yet. Check the oscillations on a receiver or a frequency counter. You may have to decrease the number of turns. Without the 365 pf, the 22pf trimmer should be able to set the VFO to 4.3MHz or so. If the VFO is oscillating at a lower frequency, then remove some turns from the coil. If the VFO is at a higher frequency, add 22pf in across the 22pf trimmer (if you are using the PCB, solder in from the foil side). You will require a wire jumper to carry power supply between the VFO and the BFO. They are the only stages that remain switched on during both transmit and receive.

Assemble the audio pre-amplifier and the audio power amplifier and attach the volume control. When power is applied to the audio stages, touching a finger to the base of Q4 should produce static in the speaker to move even the die-hard acid rockers.

Next, assemble all the three bi-directional stages! This involves lot of soldering. But all the six stages are exactly the same. Finish one stage at a time. The capacitors are symmetrically laid out and all of them are 0.1 uF with one exception (100pf at the output of Q3). Remember that the emitter bias resistors are 220 ohms or 470 ohms. If you mix up the values, the receiver will still work but it will under perform in the presence of strong signals and the transmission will be splattered. There are jumpers for T and R line across the crystal filter. Solder them up and power on the R line and then the T line alternatively. The emitters of bidirectional stages should show 2 volts approximately and the collectors should show around 8 volts and the switched-off transistor should show zero voltage on all the three leads.

For the moment of truth, solder the three coils, trimmers and capacitors of the RF filter, attach an antenna and switch it on! Check that the stages are working starting from audio end. If you touch the volume control's control pin, you should hear AC hum and static. If you touch the base of Q4, there should be a pretty

loud static. Take a lead from your VOM and touch Q3, you should get very loud static, probably mixed with local AM broadcast. Touch the base of Q2 with the test lead and you should get lesser static as the filter allows only 3 KHz of 10MHz through. Finally connect the antenna properly at the input of the RF band-pass filter and peak up the three trimmers for maximum atmospheric noise. Attach the 365 pf and start tuning around the band, peak the RF front-end on a strong signal and then tune in a weaker signal and peak for maximum clarity (not maximum sound). An important note: be sure that you have connected a proper 50 ohms antenna load. The RF filter performs correctly only at 50 ohms. If you use a long wire to do the initial testing, you will have to touch up the trimmers again for the proper antenna. Take a break, spend the evening listening to your new homebrew. If the CW signals tune to dead beat and rise on the other side again, your BFO has to move its frequency. For USB, add more turns to the coil to the BFO coil, for LSB, tweak the trimmer. You should have a perfect single signal reception. If you tune past the dead-beat of a CW signal, the signal should drop out completely.

Assembling the microphone amplifier (Q10) and the output amplifier (Q14) will complete the transmitter portion of the transceiver. To put the transceiver in transmit mode, ground the R line and apply 12V on the T line. Attach the output of Q14 to an oscilloscope but don't attach the microphone yet. Null the carrier with the 100 ohms preset and the 22pf trimmer. Each affects the other so you might have to go back and forth between the two controls. Now add the microphone and speak into it. You should be able to see clean SSB of between 200 and 300 mV on the scope. Instead of the oscilloscope you can use another 14MHz receiver to test your transmission quality. Switch off the AGC of the test receiver while setting the carrier null. A soft whistle (if u can manage) into the microphone is a regular audio sine-wave, it should result in a full carrier at the output.

Next, assemble the power chain. At this point, you will need a suitable chassis to house your project. Any metal box will do. If you don't have any, you can solder pieces of copper clad together (like I did) and make a U shaped chassis. Keeping the VFO in open air makes it drift a bit. A closed box is really very useful.

A big cookie (or chocolate) box of tin is really ideal. With a hand drill, you can easily make holes to fit the two PCBs inside it. Tin is easily soldered on. Use the biggest knob you can find for the main tuning. The plastic broadcast capacitors usually have a very short stub that cannot take a big knob. It takes on a small plastic drum that is held onto the capacitor spindle with a retaining screw. Attach the drum onto the tuning capacitor and with epoxy glue, attach a big knob over the drum. This will make your main tuning mechanism.

I use a simple DPDT switch for Transmit/Receive switch-over. If you prefer PTT operation, you can easily substitute the switch for a relay. Be sure to solder a reverse biased diode across the relay coil to prevent reverse voltage from entering into the transceiver power line.

QUIZ

1) You want to run a sloping 80 metre dipole that's 132 feet long from the top of a 75 foot tree to a fence post along the one edge of your yard. If the fence posts are 6 ft high, how far away is the nearest post to which your dipole can be attached?

2) To do some transmitter testing you need a dummy load. The transmitter output power is 125.W and the tests will be run with a keyer making a long string of dits(50 duty cycle). For safety, the dummy load should only be run at 2/3 of its rated power dissipation. What is the smallest rated power dissipation for the dummy load?

3) The new 2 metre antenna you bought has a 4.5db more forward gain than your old one(fed with RG-213 coax.). You'd also like to mount it at the top of that 120 foot tower you just put up, replacing the old 20 foot push up mast. If you feed the new antenna with RG-213 coax, which has a loss of 3.1dB/100 feet at 2 metres, will it radiate more effective power than the old one?

4) A new tower requires a base of no less than 2.5cubic yards of concrete. The area available for you to dig the hole is 3x4 feet. How deep does the hole have to be to hold the required volume of concrete?

5) Time to put a new rig in the car. On full power transmit the radio draws 22.A. The rig's manual says not to operate the radio at less than 11V. The auto's manual says that the alternator will maintain a normal battery at minimum voltage of 12.5V. You have on hand some #12 wire to connect the rig to the car battery. You'll need to run 8 feet of wire to each battery terminal and #12 copper has a resistance of 0.0016Ω/foot. Is #12 heavy enough to do the job?

1) Use the Pythagorean Theorem for the answer. The vertical side of the triangle is 75-6=69ft. The hypotenuse is 132 ft. So $\sqrt{132^2 - 69^2} = 112.5$ ft, which is the closest fence post from the tree to attach your dipole.

2) $125W \times 50\% = 62.5W$ and $62.5W / 3 = 20.8W$ required dissipation. A 100-W unit will be adequate.

3) The extra coax length = $120 - 20 = 100$ ft. Extra loss = $3.1 \text{ dB} / 100 \text{ ft} \times 100 \text{ ft} = 3.1 \text{ dB}$. Net gain = $4.5 - 3.1 = 1.4 \text{ dB}$. The answer is yes, but just barely. The added height will give your performance a substantial boost.

4) 2.5cubic yards = $2.5 \times 27 \text{ cubic ft} / \text{yard} = 67.5 \text{ cubic feet}$. The area of the top side of the hole = $3 \times 4 = 12 \text{ square feet}$. The depth of hole = $\text{volume} / \text{top area} = 67.5 / 12 = 5.6 \text{ feet}$.

5) The allowable voltage drop is $12.5 - 11 = 1.5$ V. The total voltage drop is equal to $0.0016 \Omega / \text{ft} \times 8 \text{ ft} \times 2 = 0.0256 \times 22A = 565 \text{ mV}$ drop. Yes you can use the #12 wire.

ANSWERS

CLUB NEWS

AMSAT INDIA had its first Arrow Antenna work shop in the QTH of Girimaji Equipments in Bangalore. The workshop started at around 10.A.M and ended at 6.45 p.m. Nine mast mount antennae were made. 25 Hams and SWLs attended the workshop. A discussion on ECHO was undertaken along with a Duplexer design printout. The members assembled their own antennae, and also did their own cutting, grinding, drilling, soldering, Gamma matching etc. Amongst the attendees were Dr.Giridhar(VU2MGD), scientist from ISRO, Suresh(VU3NOI), Pratap(VU2POP), Jim(VU3JIM), Soms(VU3JBA) and Wasan(VU3SRE). The clamps were made by Girimaji Equipments.

At the end of the day the proud owners of the arrow antenna were: Ismail(VU2QNY), Don(VU3DON), Sundeep(VU3SXE), Vasudev(VU3BIP), Mani(VU3WMY), Srinivas(VU3ATB), Dr.Giridhar(VU2MGD), SWL Abhay and VU2GGM, VU2JHM and VU2CHR. Many more such workshops are being planned to benefit hams outside of Bangalore.

A stimulated Disaster Communication exercise was conducted in N.Delhi on August the 2004 by a group of Radio Amateurs. Teams from Rohini, Vasantkunj and Janakpuri set up emergency stations in the offices of the Delhi Disaster Management Authority, Police Headquarters and in the offices of the DCP. The ham radio volunteers were equipped with portable wireless equipment, mobile antennas, batteries and solar panel power backups. A digital communication setup was also installed at the Divisional Commissioner's Office (Government of NCT of Delhi) for receiving of pictures from the disaster site. A demonstration of Echolink (a system of hooking a terrestrial VHF HAM repeater station to the Internet for transmission of VHF radio messages over the Internet using VoIP technology) was also given. The potentiality of the ham radio in retrieving weather information through the VHF repeater was demonstrated. Hams who took part in this exercise were VU2UKR-Sunil, VU3FUN-Rajesh, VU2OB-Sreekumar, VU3BPA-Arun, VU3AKW-Ashok, VU2VTH-Rajiv, VU2MUE-Sandeep, VU3DJQ-Raman, VU3POF-Kapil, VU3WJM-Rahul and VU2JIO-Jaison. Officials and representatives from Mobile telephone companies visited the temporary ham radio setup. Shri R. Narayanaswami, Principal Secretary (Home) came to the mock disaster site to take an account of the situation. While visiting the ham radio station at the DC's office, he expressed that ham radio operators can play a very important role in disaster communication and directed the concerned authorities to have the names & addresses of all the active ham radio operators in Delhi, for contacting in the event of a real disaster. Shri S.K. Jha, ADM from the Divisional Commissioner's Office also visited the ham radio facility at DC's office and expressed his satisfaction at the functioning of the radio amateur's wireless emergency communication system in the mock disaster exercise.

The Mumbai Amateur radio society provided communication support in the Thane Varsha Marathon, a National Event on 18th July 2004. Kids and seniors participated in this fun event. One Main station, at the Marathon Office, 3 Strategic Stations and 4

mobile stations were set up. Messages regarding start of the races, position of runners, traffic situation etc were passed on to the control room by the Hams. Hams who participated in this event were Nafisa(VU2NFS), Prashant(VU2CBU), Minal(VU2MUF), Sailesh(VU2SFN), Santosh(VU2IES), Mukund(VU2GBI), Vijay Vaidya(VU2CFO), Kadam(VU2KDM), Mohammed(VU2GYM), Ananta(VU3MWH), Pranav(VU3PPE), Relay station Vijay(VU2VVP). Event Coordinator was Jaiprakash(VU2JPN). The President of the Thane Varsha Marathon is VU2PDT, Shri Satish Pradhan.

Five Members of the ARES of the Mumbai Amateur Radio Society did yeoman service in the flood affected areas of Bihar. On receiving a call from the Ministry of Home affairs, the group left for Patna on 15/7/04. On reaching Patna, stations were set up at the Sachivalaya and at Sitamarhi and Shivhar. VHF links were established between the stations. Digital links were established between the stations and Mumbai. Qsps in pure Hindi were passed from one government agency to another. Once the telephone lines were restored, the team returned back to Mumbai after being thanked profusely for a job well done by the local authorities. The Hams who took part in this effort were Nilesh(VU2NLF), Sandip(VU2UGO), Arun(VU3AUO), Anish(VU2OZO), and Milind(VU2IZO). Mumbai Control was manned by Zyros(VU2ZRS), Huzefa(VU2HIT) and Ankur, SWL.

The Quilon Amateur Radio League conducted a workshop on the 7Mhz Hamband receiver designed by VU2RDL, OM Rajagopal on the 1st and 14th of August 2004. The workshop was inaugurated by VU2RPC, OM Premchand, President of the Kovilpetti Amateur Radio Association, who praised the members of QARL for their efforts. OM Rajagopal gave an account of the history of the RX and the circumstances warranted for its design and the working of the circuit. 21 members participated. The assembled receivers were tuned and tested with the help of testing equipments.

KUDOS CORNER

OM Mani, VU2 ITI, for winning the PICtail Design contest sponsored by MICROCHIP inc. The contest was to design and implement a circuit as a daughter board (tail board) for the flash pickit development board for low pin-count pic micro controllers. Congratulations!!

A BIG Cheer for Bangalore Hams for their effort in the Open Heart Surgery of Baby Upasana, harmonic of VU3RUN, Amitava. These selfless Hams organized the funds for the operation, venue and stay for the family. Once again VU Hams and Hams from all over the world proved their bond of friendship by contributing generously for the operation.

SWL Viswanathan VU-0020 got the WAEDC, WAG and IOTA Contest Certificates for the year 2003.

OM Raman VU3DJQ got WAEDC and WAG certificates for 2003, in SSB mode.

OM Arasu VU2UR got WAEDC and WAG certificates for 2003 in CW mode. (WAEDC: Worked All Europe DX Contest WAG: Worked ALL Germany Contest)

7th Night Foxhunt of Bangalore

a brief report by Lion Ajoy- VU2JHM
Past President, Bangalore Amateur Radio Club - VU2ARC.

The Seventh Night Fox Hunt was conducted by the Bangalore Amateur Radio Club-VU2ARC on the 26th June 2004. The event was flagged off by the Honorable Mayor of Bangalore City- Shri. Ramesh.P.R, at 4 PM from the the scenic High Court and Vidhana Soudha. Nearly Forty Bikes and Fifteen Cars took part in this Radio Direction Finding Sports using various types of Directional antennas. At the Flagoff, amongst other guests and media was Chandru-VU2RCR, President of Amateur Radio Society of India and Director of IARU Region 3.

The "Foxes" were VU2BGS-Gajendra Kumar and VU3HDP-Suresh, the last year's Foxhunt winners, assisted by VU3LBR Sagai and VU3HDO-Yogesh. The "Fox howl" frequency was 145.250 MHz, beeping every five minutes for a duration of one minute (half minute on High power and half minute on Low power) from the "Foxhole" - a well kept secret location, within a 30 Km radius of Vidhana Soudha, challenging the Bunny hunters.

Pratap-VU2POP with VU3JBA-Soms reached the foxhole by 7:25 PM taking Two hours and twenty five minutes. Since no hunters reached the Fox hole for the next one hour, clues were given by the Foxes, after which VU2GUR-Gururaj and Dr. Suresh-VU3KHR reached as the second hunting team. In third place were VU3HPG-Harsha and Hari-VU3HEA, fourth were VU3NOI-Suresh and VU3HSR-Ramprasad and in the fifth place were the husband and wife team VU3PKE-Kiran and his XYL Sudha-VU3ICH. A Special Prize was given to Govind Girmaji-VU2GGM and his family for taking part in an antique motorcycle with sidecar. Novice participants S.Chandrashekar and YYL Vatsalya were also honoured with a special prize. VU2QNY-Ismael was thanked for announcing and encouraging this fox hunt in a big way. Dinesh Gundu Rao-VU3DGK, a Ham and a member of the Legislative assembly took time off from his busy schedule and engagements to come for the event for a short while. VU2RO-Soma, one of the active, senior ham and participant distributed few of the prizes.

The Rolling Trophy in memory of VU2GX-Our senior ham and father of VU2GGM was presented to the winners along with the Flag so that the next year's foxhunt is their responsibility, as per the tradition of Bangalore Hams.

The foxhole was located 30 Kms north of Bangalore in the silent, pitch dark, open eroded terrain off the Hennur-Bagalur Road beyond Dasanayakana Halli. The Fox transmitter and antenna were hidden among the trees and the first hunters walked more than a kilometre to triangulate the signal and reach the foxhole.

The Prize Distribution was done at a private farm in Yediur Village in a grand way, followed by fellowship and dinner with nearly One Hundred and Fifty people participating.

Few of the noted participation from various Ham Clubs were Mani-
VU2WMY Secretary of Upagraha Radio Club- VU2URC, VU2TKX
OM Raman, Secretary of Bharath Electronics Club - VU2BEL,
VU2RCR Chandru President Amateur Radio Society of India,
Gururaj. N.R.- VU2GUR Custodian of ITI Vidyamandir ARC -
VU2VMW, VU3ICC and VU2JHM from Lions Clubs International -
VU2LCI, VU2POP Secretary (VU2RSB Rptr Society of Bangalore &
Amsat- India), VU3TYG, VU3HCJ, VU2GGM President, VU3SXE
Secretary, VU3JBA Treasurer, of Bangalore Amateur Radio Club

VU2ARC, Sathyapal - VU2FI, VU2RO & VU3JIM from Indian Institute of Hams - VU2IIH, VU3RSB - Sharath from Andhra Pradesh was visiting ham who actively took part.

The Momentos, Prizes and Food were sponsored by various individuals and organizations. Volunteers who made this Radio Sport a great, memorable and fun loving weekend event, are now eagerly awaiting the next Fox Hunt in order to sharpen, their triangulating and map reading skills, handling GPS and GIS, Combing tricks, "Head/Cap Lights" with more gadgets, or less gadgets and more grey matter !!!

Looking forward for the next year's Night Fox Hunt event with VU2POP and VU3JBA as foxes.

CW ANY DAY

At the age of 13, as a boy scout I was asked to memorize Morse Code and the characters were KATTU KADA which later on became DOT DASH. Kattu Kada was a familiar sound in Telegraphic offices. Yes, I memorized Morse Code and was able to receive 3 words per minute flashed on a Torch Light and won a small gift.

On finding by accident, a small booklet DOERLE yellow wrapper titled "Make Your Own Regenerative Receiver" using a battery tube and 9 volt power supply, I could pick up Voice of America and a local cw station. It was all about shipment of goods, probably Railways.

I joined the Forces and was trained as a wireless operator and there was no looking back. I became a full fledged wireless operator and the morning QTH was servicing communication Equipment. I could always receive Morse but sending was not permitted.

On an assignment I was asked to assist an Army officer to conduct field trials propagation in School of Signals, Mhow and when I entered his shack I was surprised to find an array of rigs and Morse key and a steering wheel prominently located. Later on I came to know that the steering wheel is for rotating the monstrous looking cubical quad on roof top and the operator happened to be VU2PS OM GILL. The bug had truly bitten.

In 1968 I got my ticket. From 25 watts Homebrew to 100 watts commercial rig I must have worked DXCC three times over on cw giving me immense pleasure and fulfilment. When I went on SSB for a few days some how after a few overs there is nothing much to yap about whereas on cw you chew the rag for hours with no strain on the vocal chords.

I no longer work DX but thanks to VU2RQ and VU2DX with whom I have a QSO on cw to ease the tension for about ten minutes daily. I am now EIGHTY years young and for me cw any day and everyday. CW will stay for a long time as SMS ... --... as long as cell phones exist

73's and Happy pounding, VASU, VU2VZ.

Congratulations to VU2VAT, OM Jacob, Vice President of QARL, for receiving the best Social Worker Award from the International Red Cross Society.

INTERNATIONAL NEWS

Election of the office bearers of Bangladesh Amateur Radio League (BARL) was held on 6th August 2004 in the conference room of Press Institute of Bangladesh, Dhaka. The election was administered by Dr. Rezwan Siddiqui Director General Bangladesh Press Institute (PID) who was selected by the outgoing Executive Committee of BARL to administer the election. The election was held in a cordial atmosphere in presence of almost all the members of outgoing executive committee and a good number of Ham operators of Bangladesh. The names of the candidates who were elected are given below with their posts mentioned against their names.

1. Mr. Sharif Ahmed S21AS	President
2. Mr. Anwar Islam S21L	Vice President
3. Mr. Abdur Rashid S21AR	Vice President
4. Mr. Monzurul Huq S21AM	General Secretary
5. Mr. Belayet Hossain Robin S21RB	Asst. General Secretary
6. Mr. D.M. Hamayet S21DM	Treasurer
7. Imran Ahmed S21P	Member
8. Mr. Rubaiyet Hasan Khan Ratul S21RA	Member
9. Mr. Ashraful Monem Khan S21HA	Member
10. Mr. Liaqat Ali Molla S21V	Member
11. Mr. Saiful Huda S21SH	Member

SHARIF AHMED S21AS, KE4AET President BARL

Email : sahmed@btb.net.bd, s21as@yahoo.com.

Tel: 880 2 7100340, 880 171 526803

GPO Box 622 Dhaka 1000

Bangladesh Amateur Radio League: House 222, 1st Floor, New Elephant Road, Dhaka 1205, GPO Box 3512, Dhaka 1000. Ph: 880-02 8617480. Fax: 8613298.

Email: s21am@agnionline.com

MORE COUNTRIES DROP CW

More restructuring has taken place in Europe. The GB2RS reports that Finland has now officially dropped the Morse code requirement for that nation's hams to have access to the High Frequency bands. GB2RS says that Finland actually deleted the Morse requirement on the 1st of November of 2003. Now, with the latest rules revisions there are only two classes of amateur license in that European nation.

Also from GB2RS word that former French Class 2 licensees with F1 and F4 callsign prefixes are now being heard on the High Frequency bands. According to the French national amateur radio society, this change was implemented on May 16th.

But C-W is far from dying or dead on the other side of the Atlantic. In fact the fourth European High Speed Telegraphy Championships take place the 15th through the 19th of September in Montenegro and Serbia. (GB2RS)

NEW ZEALAND SAYS GOODBYE TO MORSE

Finland and France are not alone in saying goodbye to Morse code testing. So has a nation down-under.

On June 4th New Zealand's Telecommunications regulators issued a decree that says Morse proficiency testing has ended

and that New Zealand Limited Class operators will soon have access to the high frequency bands. In fact, regulators have decided to upgrade Limited Class operators to the New Zealand General Class.

According to the notice, operators will not be required change their callsigns or take any other action. The new rules go into effect on June 17th. (ZL2BHF)

MANGOLIAN ARDF

The Mongolian ARDF Invitational Competition was held from July 23 to 26, 2004 including a one day excursion intermediary. This Invitational Competitions were held every 3 years and this time was its third occasion. Though JARL and CRSA team joined in the 1st and 2nd Competition, this

time only the KARL team participated to compete with the MRSF team. 18 competitors from KARL and 31 competitors from MRSF competed on the first day for the 3.5 MHz game and on the second day for 2 meters.

At the opening ceremony, on July 23rd, Mr. Sahalu, who is both, the President of MRSF and the President of the Mongolian Telecommunications Company, welcomed KARL team. Many Mongolian competitors were young new faces and competitors from the Mongolian Army were well trained.

At present, about 210 amateur radio stations were approved in Mongolia, though currently only 30 or more are very active on DX while VHF is not that popular. Since CW test is still compulsory and the equipments expensive, there is no increase of amateur radio operators in the last year.

Nevertheless, for foreign visitors, they issue "operator licenses" in accordance to RR Article 25, and there are various types of licenses such as VHF and UHF only for 2 weeks with US\$25. If you like to operate HF also for about 1 year, the revenue stamp charges will be some US\$100. The MRSF handles all this on behalf of the Government. Any amateur (IARU members) who wants to travel to Mongolia, and would like to operate amateur radio, please contact MRSF, 3 weeks in advance of arrival. Secretary, Mr. Khosbayer, JT1CD, e-mail address: jt1kaa@mtcone.net.

Silent Key

Dr. Shrikant Jichkar, VU2SJA, Chairman of NIAR, died in a road accident on 3rd June 2004.

VU2BSY, OM Vasu died on Sept 8th 2004.

The late Marlon Brando, famous American actor, KE6PZH, died in Los Angeles, California on July 1.

DX'PEDITION TO RANKIN ISLAND AS 108

OD5RMK - A Report by Alfeo I1HJT

Team:

NaimOD5LN, Alfeo I1HJT, Claudio I1NVU, TonyIK1QBT

The geography: The Asia 108 is a group of three flat, rocky islands of eroded limestone pavement, 5 km north-west of Tripoli, rising to 6m. There is some maquis-type vegetation but the islands are otherwise relatively bare except in spring when its carpeted in wild flowers ; however on Palm Island there are also small ponds, boggy areas and two reedbeds. Some of the wild flower species are nationally endangered or extinct along the mainland coast, or otherwise unusual, e.g. Euphorbia pithyusa, Cressa cretica. Known as the Bird Islands in the last century due to the abundant breeding seabirds, but presently only Larus cachinnans possibly still breeds ; however even this species has been declining rapidly (80-90 pairs in 1956, min. 15 pairs in 1975, none breeding April 1993). The site would make an excellent observatory for

monitoring visible migration of waterbirds along the coast (egrets, ducks and waders, etc...). The globally threatened seal Monachus monachus and sea-turtles Chelonia mydas and Caretta caretta were formerly recorded at this site, the latter using the sandy beaches for nesting. Rabbits, rats and snakes are also present. Being the off shore island, Rankin has been used for military purposes in the past, there being some concrete buildings and the platform for two



guns, erected in the early 1900. Nowadays all the buildings are in bad shape and some are ruined. There is a lighthouse on Rankin Island, with power supplied by solar panels. The area is declared as Marine Reserve, the islands are visited commonly by picnickers, tourists and hunters, and also by schoolchildren and fishermen. Camping is not permitted and all visitors must leave the area before sunset.

The background of the dx'expedition: The idea to activate AS 108 germinated when Naim, OD5LN came to Sanremo (Italy) for job reasons. Naim agreed to care of the logistic and the domestic part of the operation as well as to get the licences, while we would take care of the technical part, the equipment, antennas etc. One important issue was the period of the activation, with the sun activity so close to the minimum and the propagation so poor. It is slightly better in winter since there are more dark hours in the north hemisphere. But against that we have to bear in mind that in winter time we could have bad weather on the Mediterranean sea and the risk of not being able to reach the island due to strong wind and rough sea was high. Being forced to plan our activity in summer time, after some discussion, we decided to activate the island during the I.O.T.A. contest, scheduled at the end of July.

The choice gave us more chances to go to the island but the price to pay would be bad propagation. But this was definitely a better

option than looking at the island from the mainland in stormy weather!!!

The preparation: The program was to remain on the island for three days, from Saturday morning to Monday evening, camping on the island for two nights. As already mentioned, camping is not allowed in the protected area but Naim obtained the permission by presenting the I.O.T.A. contest as an international happening. Our licences were released as OD5/prefix but, in order to make it more interesting and fast, Naim asked for a special callsign. As usual in this occasion, we had to face the transport problems. High transport costs forced us to keep our equipment to just our exact needs. We planned to use two stations, one for the contest, the second for the WARC bands during the contest. We knew that this was not a winning strategy for the contest since we concentrated less on the the multiplier search. We

believed it was more important to assure the AS108 reference to a larger number of hams, rather than a top IOTA contest score. Other dilemma was to choose between beam antennas and amplifiers. By using the beams we could renounce the amplifiers but we would have bigger volume to transport and need the masts too. By using the amplifiers we would have smaller volume but bigger weight and require more electric power. After much discussion end we decided to use vertical antennas and amplifiers

taking into account that the vertical antennas, close to the sea, would have a low take off angle, favourable for dx. Furthermore an amplifier would be carried by Naim to Lebanon in advance and the generators could be borrowed locally.

Summary of the equipment: 1 transceiver TS400, 1 transceiver TS450, 1 transceiver IC735 (spare), 2 SWR bridges ROS, 2 switching power supply, 1 linear amplifier FL2100Z, 1 vertical antenna Eco 7+, 1 vertical antenna HV6V, 1 dipole for 80m, 2 filters Dunestar 3 laptop, 1 antenna analyser MFJ259, interfaces, keyers headphones, cables, etc.

Furthermore, personal belonging, medicines etc. all exceeding 120 kg. 2 power generators and the relevant fuel, 1 tent and blankets, 2 desks 2 big umbrellas, 4 chairs, 1 linear amplifier 811, electric cables and accessories, 1 roll of RG213 coaxial cable 1 ice box, drinkable water and food were procured by Niam locally. Very important issue is the packing of the equipment, knowing how delicate they are and the shock they are subjected to when they are stowed on the aircraft. This is a time consuming operation, with some of the equipment being heavy and delicate, plus the fact that they must be easily opened for customs inspection.

The trip: After the first customs check we were met by the waiting Naim with news that the OD5RMK callsign was just released for our operation. The Lebanese customs were a hard

obstacle, in spite of Naim already obtaining the authorization to import our equipment. Our luggage was inspected and sealed and transported to the custom docks from where we could collect the following day. That would have been too late for our purpose, so, after a long discussion between Naim and the officials in Arabic, our material was released 2 hours later. From the airport we proceeded to Naim's house where his wife Hannan offered us a nice dinner, Lebanese style. The following morning we were up at 4 am to leave for Tripoli, one hour away. We left for the island by boat. The volume of the stuff we loaded was so big that the main part of the deck was full. During the boatride we took pictures specially for qsl cards. Thank God for digital cameras!



Setting up the station: The landing on the island was not easy, with the entry in a small gulf, protected from the wind with an almost vertical cliff. Once there and we started to disembark the material by forming a human chain, from the boat deck to the rocks. From there we had to transport all the stuff to the building, 300 meters away with the first 100 meters being sharp rocks before the small path to the main building. The sun was already, but with a breeze and clear sky. We immediately got to work after applying lots of sun protection!!!! We worked in cohesion and soon the first antenna, the Eco 7+ was raised on a rock close to the sea. In spite of the Dunestar filters, we tried to install the antennas as far as possible to avoid interference when operating with two stations. The second antenna, the Butternuth HV6V, was erected on top of the building roof, where we had the desks and the tent. The power generators were at the ground floor to avoid the noise.

AS 108 on the air : The I.O.T.A. contest started at 12,00 local time (12,00 GMT) and we had our first qso at 09,31 GMT 18 Mhz. The pile up was immediate but propagation was not helpful. Meanwhile the second station was ready to start. The bigger generator refused to start. So Naim organised for a spare one from Tripoli, but due to the rough sea and stormy winds, it was impossible to get it from the mainland. As it is we were having a tough time holding on to our desks and umbrellas!!! So we had no alternative but to operate the two radios barefoot since the other generator was not big enough to support an amplifier. Still, the qso rate was not bad, and we were always over 100 qso per hour on the contest too. One moment we were under a big pileup and the next moment we were calling CQ with no reply!!! There were many stations from Russia, Ukraine, and north Europe, some JA and a few from the States with very low signals. As always in the first row were the Italians. Most of our activity was on 17, 20, 30, 40m,

with few openings on 12 and 15. The noise was very strong on 80m, so we are forced to forget this band for the first night, hoping to have a better chance on the second night, after installing a dipole. After sunset when the wind decreased, we got our spare generator. But that was not the end to our problems. We discovered that the power socket of the generator is of American standard, and our plugs can not be used. We didn't have the tools and material to arrange a plug to fit into the socket and the only way out was to dismantle the control panel and to connect the cable directly. It was dark when we were finally ready, unfortunately the generator was not big enough to supply to two amplifiers and so we decided to continue to run the contest barefoot. At this juncture we would like to comment that the I.O.T.A. contest committee's contest rule to exchange RS(T), serial number and I.O.T.A. reference for every contact means a slow qso rate. The point is that when an island is rare and the operation lasts for a short time, having a low qso rate means that many stations will miss the contact.

We worked all night without interruption in spite of a very poor propagation. Early in the morning we had the surprise to be called by AT0BI on 20m, with a weak signal. Alfeo recognized YL Sarla's voice, but the qso was not easy but finally callsign and numbers were in the log!

On Sunday early morning Naim received a telephone call



announcing that the permission to remain in the island for the second night was not sanctioned and we must leave to the mainland before sunset. The Environment Ministry, under which authority the island falls, allowed the operation only for the contest night and no extension was possible. We had no other choice than to dismantle all our stuff, ready to embark it on the last boat tour at 19,00 local time. Our last qso was at 15,17 GMT with AS 108. During the sail back the boat made a complete tour around the island and we observed all the coast around.

Back to Italy: Though we were to leave on Friday, our equipment was inspected and sealed by the Lebanese customs. On Friday we had an early flight and all the equipment was loaded on time after paying all the taxes. We were very overweight but Middle East Airlines forgave our excess!! Soon we were off and landed in Italy where we were met by our friend Claudio, IK1LWK. We were home!!!

THE IARU HF CONTEST

For the first time in the history of Ham Radio in India, 6 Headquarter stations took part in the IARU HF Contest held on the weekend of 10th and 11th of July 2004. A special call sign was allotted for the contest by the WPC. The following are the stations which participated along with their special call signs :

Call Sign	Handle	Special Call sign	Band	Mode
VU2SWS	Sarla	AT4HQA	15mtrs	SSB
VU2UR	Arasu	AT4HQB	20mtrs	CW
VU2PAI	Pai	AT4HQC	40&10mtr	CW/SSB
VU2SMN	Sahas	AT4HQD	20mtrs	SSB
VU2NXM	Basappa	AT4HQG	15mtrs	CW
VU2DSI	Datta	AT4HQH	10	SSB

Mother nature, was not at her very best during the 24 hr period, but all the contestants gave their 100 percent as they were representing their country in a prestigious event. This is what they had to say:



AT4HQA(VU2SWS-YL Sarla) "My first experience in the IARU contest was in 2002 when I was part of the ARRL team operating WIAW/5 from Texas USA. I had a ringside view of the way in which the stations were organized and I also

learnt to operate under pileups!! It struck me at that time that we in India had the stations and the potential to be as good as the rest of the world. This year with the full support of ARSI, particularly the president Chandru, VURRCR, my thoughts materialized into action. After countless emails and telephone calls, the team was made. On D day, the conditions were not too good, but I was on air all 24 hrs ably assisted by my friend and mentor VU2AF, Adolf. Between cups of tea and plates of food, we attacked the band with gusto and worked about 300 stations worldwide with 21 Headquarter stations. My shack was a Yaesu FT 840 with a five element triband yagi and an Ameritron AL80B linear amplifier, with Log-eqf logging software. I hope in the coming years India puts up better and bigger stations and gives the rest of the world a run for their money!!!!"

AT4HQB(VU2UR-OM Arasu) "India has for the first time attempted a multi multi work. But, it is not to its full capabilities and capacities. It was fun this year and it is going to be a tougher one, next year, when we plan in a better way and hope to get better conditions



and consequently good score too. I worked with an inverted V dipole, Kenwood TS-140S, PS 33 power supply and a semi automatic Vibroplex bug key. I made around 100 qsos worldwide".



AT4HQH(VU2DSI-Datta) "Though 10 metres is not an open band nowadays, I still enjoyed representing my country as a HQ station on this band. The band opened for just 2 hrs in the entire contest period and I could make only around 50 qsos. I think the HQ stations should be located in areas free of interferences and away from the cities. Also the stations should be distributed all over VU. The special call sign was very helpful in catching the attention of the dx stations. I am sure that in the future we will put up better and more stations and win the contest. I worked with an ICOM 746 and a 3 element Mosley triband yagi putting out 70 watts".



AT4HQC(VU2PAI-OM Pai) "It was a lot of fun working this contest specially with the special call sign. I operated on 10 meters cw and 40 meters ssb and cw. The 10 meter band was dead...on saturday evening for the initial hours of the contest but then signals picked up and I

made some qso's on 10 meters. 40 meters proved to be a big surprise as I thought it would be just noise and static because of the monsoons. Worked some japanese stations on 40 m cw and also managed to work Hawaii and the West coast of the U.S.A on 40 meters cw. Considering the fact that I was operating practically dead bands for this time of the year I was happy to make some 200+ qso's on 40 and 10 meters. It was great fun working this contest and am waiting for the next one. My Operating conditions: Rig- Kenwood ts 2000 with built in antenna tuner. I used cushcraft A4S beam(4 element 4 bands) with the 40 meter add on kit for the contest. Logging software CT by K1EA, and bench keyer paddle".



AT4HQD(VU2SMN-OM Suhas) "My equipment for the contest was an ICOM 730 with 50 watts, TA351 5 element triband beam from Nagara. The prefix AT4 was a bit confusing to many dxers, who thought I was operating from the

Andamans!!!!!!But everyone was aware that this time VU had many HQ stations in the contest. There was very high static, noise and qsb on the 20 metre band which was dead for most part of the day, but opened fully towards the evening and night. I made over 300 qsos around the world. I enjoyed working the contest and I feel that in the forthcoming years, we should plan better and advertise in advance and put up bigger and louder signals and aim to win".

AT4HQG(VU2NXM-Basappa Arabole) " I felt proud to be part of the VU team in the contest. The special call sign was a bit long for us CW operators and most dx stations were confused about our qth, thinking we were operating from the Andamans!!!!.



Band conditions were not too conducive though when opened, it was good working Europe and other dx stations. I did about 150 qsos in 15metreCW. My shack consisted of Ten Tec model 540, (18 Yr old model), Pwr out put 50watts, my antenna - inverted vee, Memory keyer Logikey-K1, Beautiful ATU MFJ -901 B (Tunes any antenna to any frequency), UTC Clock of MFJ. Keyer - Electronic Keyer Unitra (Poland) make".

TRIBUTE

VU2IR, OM Bindu, the Satellite Ham

OM Bindu, VU2IR of Bangalore became a silent key on 31st July 2004. He was very active on HF and satellite modes. Excerpts from his last Satchat Posting:

20 June 04 FO-29

" Now and then, I take a look at FO-29. The Beacon usually appears to be normal. Once in a while, the Beacon is a bit fuzzy and FMing, or making clicking sounds. The returns are usually good. Rarely, any Hams station is heard. Months ago I heard VU2RM. Some times, I call CQ and hear only my own voice. Not that the situation has always been so. FM carriers are heard all over the pass band. Could not identify the source. My guess is that it is Taxi service of near by country.

AO-16 is a Satellite easy to monitor. It has a strong signal. A Handy would 'hear' it. It can help you learn about Orbits and Tracking satellites. All amateur satellites are useful for this purpose, and, you don't have to know what the satellite is saying. It is Fun to follow that the 'Bird'. It is great satisfaction and thrill to find the Satellite is there, at the **Expected Time** and the **Expected Frequency**. The Big Thrill, is that, you can follow the bird as it rises from the horizon and reach the top and the sink below the horizon. That is, from "AOS" to "LOS". And, how is it done? By watching the change the in frequency and strength of signal. This is a 'First Step'. There is lots more interesting things, in tracking satellites. I would not 'tell it all' and spoil the fun for you! I gave up on AO-7. I heard it last, on 29th March 04. Earlier, a few hams (not school children but us OT's) in Bangalore, 'worked' the Sat on CW mode using a 'Handheld'. The PTT on the Handheld was the 'Key' to send CW. It was CW all right, but barely that! Nothing better was expected. After all, it was an experiment, even if its purpose was not entirely valid. Echo "More power than UO-14. Plus Digital mode" I can hardly wait for, 29th of June, the launch date. Remember, Echo needs a PL tone of 67Hz to go through the Sat. My Radio is old and it has no built in PL tone. So I homebrewed it. Many Thanks to the members of VUSAT group for helping me with the info I needed. The PL Tone thing is yet to be tested on a Satellite. Incidentally, SO-50 also requires the same tone.

VUSAT No news is good news. Expected launch in Sep/Oct 04 still valid, I suppose. Are you ready for VUSAT? If you have worked ECHO, Then, "U-V" or "V-U" is no problem you".

SAT 'GUP-SUP': VU2TYG 'Nitin', was heard on SSB - on VHF! Getting ready for ECHO Nitin? VU2FF 'Subbu' has acquired a 10 watt rig for VHF. He will add 67Hz PL Tone to this. VU3SXE 'Sundee' who is heard on SO-50 is another ham rearing to on ECHO. VU3NIO 'Suresh', VU3SRE 'Vasan' and a few more, and seasoned SatOp, would surely be heard on the new Bird(s). VU2GUR 'Gururaj', now has a all mode rig, for VHF & UHF. Targeting the FM, SSB & CW mode Birds. A word about the Antenna building activity. Banaglore hams have been busy building their Fox Hunt antenna. Surely these antennas would find use for hunting Birds. Sat Chat-End"

THE RSGB IOTA CONTEST FROM AS-169, ELEPHANTA ISLAND

A Report, by VU2NXM OM Basappa Arabole.

After the successful activation of Elephanta Island, we in the group wanted to visit and work the beautiful island again and what better opportunity than the IOTA Island contest!!! So once again armed with the permission from the WPC, VU2UR, Arasu, VU2AVG, Avinash and my self reached the island on 23rd July 2004. Being the monsoon season, it was raining very heavily, but the villagers lead by Mr Narendra Padate welcomed us and we got down to business immediately. A half square antenna for 15 metrs and an inverted V dipole was erected and by 0910hrs UTC, we started working on 15 mtrs. The Japanese came in loud and soon we were in a pile up situation. The half square antenna did wonders!!!

The next day, 24th July, a demo cum lecture was organized for the school children in the island and the programme was inaugurated by Mr. Narendra Padate with a qso on 40 metre with VU2DSI, OM Dutta from Ahmednagar. This was followed by a live demo, wherein the schoolkids asked many questions on air, which were answered by VU2DSI, who was coming in 59+. The kids were so excited and happy and wanted to learn more about the hobby. We explained to them all details of the hobby including the procedure for procuring a licence and also about the important role played by Hams during national calamities like the Gujerat earthquake and the recent floods in Bihar.

In the afternoon, we were joined by VU2SWS, YL Sarla, who operated on 15 mtrs in rapid fire speed!! !Soon it was time for the contest to begin, And we started with 15 metrs SSB. Inspite of the heavy rain our antennas worked great and we worked non stop in different bands in SSB and CW till the bands were silent. We made 375 contacts with 40 multipliers. Avinash and Sarla worked SSB, while Arasu and myself concentrated on CW. Our equipments were Tx/Rx HF Ten Tec Model 540, ATU MFJ 901-B, Logikey K-1, electronic Keyer, VHF Handy, Tx/Rx FT 757 GX, Tx/RX IC 730 and 3 200 Ah batteries and sufficient copper wire, FC etc.

It is always a pleasure to work as a group in a contest or just to spread Ham awareness. Island activation is an activity which gives the same feeling of an explorer finding new lands. Our trip to Elephanta would not have been possible without the hospitality of Shri Narendra Padate and his family and the cooperation of Mr Irshad Ahmed of the WPC. Our country is blessed with many islands and we hams should try and activate as many as possible. The whole world is watching us!!!

Hi Hi

While working as a television news cameraman, I arrived at an accident scene, and a cameraman from another station pulled up behind me. As I parked the news cruiser, I heard a policeman on the scanner using the radio phonetic alphabet to alert other officers. "Be aware that the Mike Echo Delta India Alpha has arrived," he said.

I approached the officer, looked him in the eye and said, "You might be surprised to know that some of us in the Mike Echo Delta India Alpha can Sierra Papa Echo Lima Lima." W3LAP