

August 2003

Volume 4, Issue 1

ANODE

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Editor's Comments

The Power and the Flu

Power failures galore this week. Which hasn't made the Anode any easier to produce. They also coincided with my getting the flu and made the whole recovery much worse than it should have been. So this month's Anode may or may not get to you at the normal time.

Power to Roodekrans has failed more times than Windows this

week.

(I saw the BBC the other night and now ICASA has two meanings for me.)

Digital Radio in the US

In the US they hope to have 2 Million subscribers to digital radio by 2005. They are broadcasting 100 channels of radio to mainly cars nationwide. The cars are fitted with a special digital radio.

Ok so now we are rich radio amateurs. The next RAE exam will cost you R450! I got this email between power failures:-

From: Peter Hers

[zs6phd@mweb.co.za]

Sent: 2003-08-06 20:54

To: ***

NEW FEES FOR THE RADIO AMATEURS' EXAMINATION

Following our email of 2nd August, the SARL has now confirmed that the combined RAE fee

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Why an Amateur Radio Operator is called a HAM

Gerry Crenshaw, WD4BIS, Garland, Texas

(This was previously published in the Amateur Radio Communicator MARCH/APRIL 1994)

Have you ever wondered why we radio amateurs are called "HAMS"? Well, according to the Northern Ohio Radio Society, it goes like this: the word ham was applied in 1908 and was the call letters of one of the first Amateur wireless stations operated by some

members of the HARVARD RADIO CLUB. There were Albert S. Hyman, Bob Almy and Peggie Murray. At first, they called their station Hyman-Almy-Murray. Tapping out such a long name in code soon called for a revision and they changed it to HY-ALMU, using the first two letters of each name.

Early in 1909, some confusion resulted between signals from Amateur wireless HYALMU and a Mexican ship named HYALMO, so they decided to use only the

first letter of each name and the call became HAM.

In the early pioneer unregulated days of radio, Amateur operators picked their own frequency and call letters. Then, as now, some Amateurs had better signals than some commercial stations. The resulting interference finally came to the attention of congressional committees in Washington and they gave much time to proposed legislation designed to critically limit Amateur activity.

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Special points of interest:

- Contact details on back page

Why an Amateur Radio Operator is called a HAM

(Continued from page 1)

In 1911, Albert Hyman chose the controversial Wireless Regulation Bill as the topic for his thesis at Harvard. His instructor insisted that a copy be sent to Senator David I. Walsh, a member of one of the committees hearing the bill. The Senator was so impressed, he sent for Hyman to appear before the committee. He was put on the stand and described how the little Amateur station was built. He almost cried when he told the crowded committee room that if the bill went through, they would have to close up the station because they could not afford the license fees and all the other requirements that were set up in the bill.

The debate started and the little station HAM became a symbol of all the little Amateur stations in the country crying out to be saved from menace and greed of the big commercial stations who did not want them around.

Finally, the bill got to the floor of Congress and every speaker talked about the poor little station "HAM."

That's how it all started. You will find the whole story in the Congressional Record. Nationwide publicity associated station HAM with Amateurs. From that day to this, and probably to the end of time, in radio, an Amateur is a HAM.

GL and 73's de Gerry WD4BIS

[Page last updated: April 1996
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Mars influences, July and August 03

Just a note to remind everyone to SLOW DOWN. Mars has already dropped to 1/3 its normal speed, meaning projects are already slowing down and resentments are starting to rise. Remember this year Mars will be at its closest approach to Earth in almost 60,000 years. As Mars gets closer and closer to Earth during July and August, anger and resentments will become more common to see.

Now is a good time to refresh your memory on how to assert your needs without becoming aggressive or angry. If you're a manager or owner, a refresher course on how to deal with oth-

ers who are angry or resentful would be most helpful to your business right now, both internally and externally.

Use these situations to identify what issues have not been handled well, and start working to collaboratively find remedies for them. Remember, we're still doing the two work for the new 2000 millennium number. We'll be doing it for nearly a thousand more years, so we better get used to learning how to collaborate.

Some of you are also likely to notice that your energy levels are dropping. This is related

to Mars slowing down and just tells us this is a good time to recharge more and do less. Try to ensure you have enough down time to properly regenerate yourself daily and weekly.

Caffeine won't really help this situation, as it depletes your adrenal glands. Consider trying herbs like Astragalus (Lifeforce's "Sunbright"), which rebuilds the adrenal glands and your entire immune system slowly, or contact your naturopath or herbalist for more suggestions. (www.lifeforce-intl.com) (it makes total sense to take, and if you already are, up the amounts, the Lifeforce

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Editors Comments

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has been increased with immediate effect to R450-00. This increase is necessary to take into account the new application fees levied by ICASA as from 28th July 2003.

The fee of R450-00 includes all of the following:

- Application for certificate of proficiency (Amateur Radio Operator's Certificate)
- Cost of certificate
- Application for licence
- Licence fee
- SARL costs with regard to setting and administering the Radio Amateur's Examination on behalf of ICASA
- All administration costs

concerned with obtaining the certificate and the licence

The above fee will apply to all applications for the Radio Amateurs' Examination to be held on 16th October 2003.

The Council of the SARL sincerely regrets this increase in the fees. Unfortunately, this increase is entirely outside of the control of the SARL, and results from a new schedule of application fees which applies to all licences issued by ICASA, and not only to amateur radio licences. The SARL conducts the Radio Amateurs' Examination on behalf of ICASA, and costs are determined on a break-even basis; IE: The SARL does not make a profit on the exercise, and is

not able to subsidise the fees.

Further information can be obtained from myself, contact details as below.

73

Peter Hers

ZS6PHD

Email: zs6phd@mweb.co.za

Vice-President: SARL, Councillor for RAE, Club liaison and Membership development

WRC FALLOUT: SWITZERLAND GOES 100% NO-CODE

Meantime, Switzerland may be the first country in the world to take advantage of the revised Radio Regulations. According to the website of

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Mars influences, July and August 03

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Products to counter these influences...! personal note from Manfred) Never again in your lifetime will the Red Planet be so spectacular!

This month and next month the Earth is catching up with Mars, an encounter that will culminate in the closest approach between the two planets in recorded history. The next time Mars may come this close is in 2287.

Due to the way Jupiter's gravity tugs on Mars and perturbs its orbit, astronomers can only be certain that Mars has not come this close to Earth in the last

5,000 years but it may be as long as 60,000 years.

The encounter will culminate on August 27th when Mars comes to within 34,649,589 miles and will be (next to the moon) the brightest object in the night sky. It will attain a magnitude of -2.9 and will appear 25.11 arc seconds wide!

At a modest 75-power magnification Mars will look as large as the full moon to the naked eye.

Mars will be easy to spot. At the beginning of August, Mars will rise in the east at 10 p.m. and reach its azimuth at about 3

a.m. (Northern hemisphere)

By the end of August when the two planets are closest, Mars will rise at nightfall and reach its highest point in the sky at 12:30 a.m. That's pretty convenient when it comes to seeing something that no human has seen in recorded history.

So mark your calendar at the beginning of August to see Mars grows progressively brighter and brighter throughout the month. Share with your children and grandchildren. No one alive today will ever see this again.

In Search of the Elusive SES



- track solar activity with this simple VLF receiver

With the continuing and growing interest in solar flare activity, including the predictions for Cycle 21, radio amateurs and experimenters alike are searching for methods to follow and record this fascinating phenomenon. The SES (Sudden Enhancement of Signal) receiver that I am going to describe in this article provides a simple answer.

When a solar flare occurs on the sun, there is a major emission of X-rays. This has the effect of increasing the electron density of the D layer, immediately enhancing the storm noise (or the transmitted

signal) to levels about twice normal. The effect is very prominent in the LF and VLF ranges. This enhancement, though it has a rather rapid rise time as seen from the recordings in Fig. 1, has a slow decay time as the D layer re-establishes its normal condition which can take from 30 minutes up to an hour.

Heat generated by the sun in the daytime periods expands the gas in the D layer, lowering its efficiency for radio propagation during the day. Similarly, the cooling of the layer allows the gas to contract, increasing its efficiency; this, of course, is the reason that AM radio stations are received at greater distances at night.

There also are seasonal effects, which occur as the Earth heats or cools, depending upon the angle of the sunlight as it strikes the Earth.

Receivers used to record these enhancements come in two categories. The first is an SEA receiver that is tuned to an unused frequency spectrum in the VLF range-hence the name, Sudden Enhancement of Atmospherics.

The second type is tuned to a transmitted signal in the VLF range, and is the SES receiver-referred to above. SES receivers are easier to

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In Search of the Elusive SES

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tune, and you do not have to be an expert to interpret the recording charts.

Building the SES Receiver

A proven circuit for building a tuneable SES receiver is shown in Fig. 2. It is basically a high-gain amplifier, which is tuneable from 17.8 to 35 kHz. If you use the exact components shown on the schematic.

the frequency range will be from 17.8 to 23 kHz. This circuitry is then followed by a detector and integrator and finally by a dc amplifier which brings the dc signal related current up to a proper level to operate an analogue meter or a recording device.

The recorder recommended is a model 288 Rustrak (100 uA)

with a chart speed of 1 inch per hour, although I have used Esterline Angus 0-1-mA chart recorders successfully. The receiver has more than enough gain to peg a 0-1-mA meter.

All of the parts used in the construction of the receiver are standard, with the exception of the inductor coils. These inductor coils (Miller 6319) are high Q types and are Litz-wire wound. They can be obtained from Bell Industries, J. W. Miller Division, 19070 Reyes Avenue, PO Box 5825, Compton CA 80224.

Wiring of the circuit is not critical; however, I suggest that a socket be used to mount the IC amplifier. A substitution for the RCA CA3035 amplifier array is the more-readily-available Sylvania ECG-785. Both wideband amplifier arrays are

made up of three individual ultrahigh-gain amplifiers. These amplifiers have low noise characteristics, can be operated either independently or in cascade and have excellent high cascade voltage gain -129 dB at 40 kHz. The output transistor (RCA SK3019) can be replaced with either a Sylvania ECG-108 or a CE-214. Power supply requirements are 9.3 V dc for optimum operation but any well-regulated 12-volt power supply can be used. The higher the voltage, the "choppier" the trace will become on the recording.

Initial Tuning Procedure

Run the cores of L1 and L2 completely in. Proceed to turn the gain control (R1) 1/4 turn

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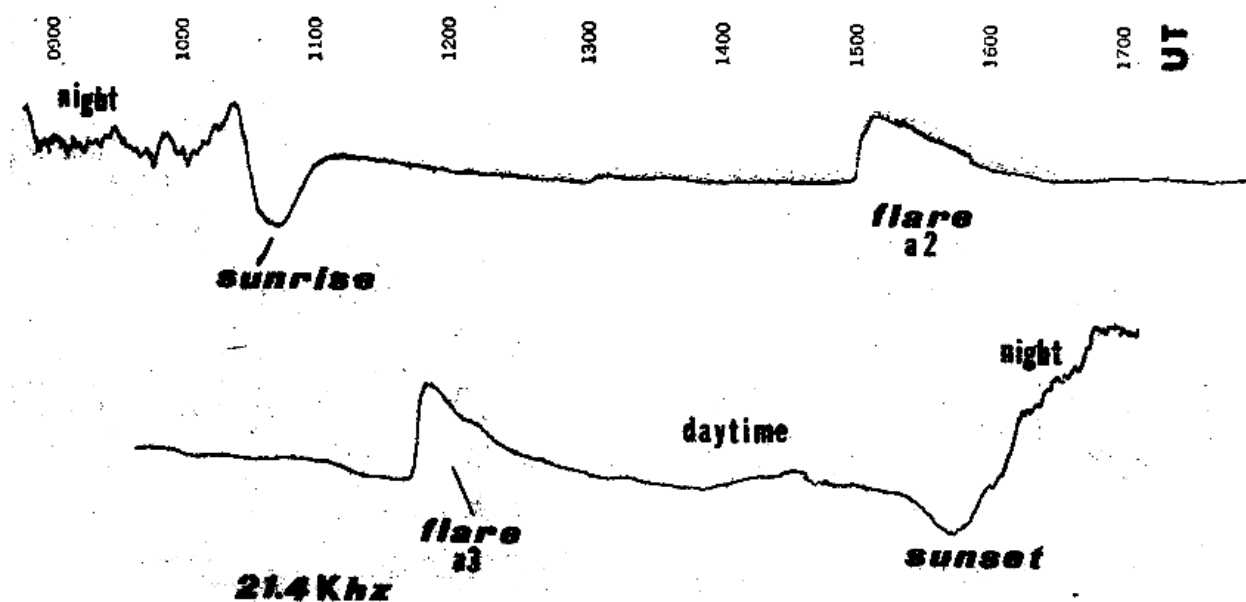


Fig. 1. Actual recordings showing characteristic fast rise/slow decay times.

In Search of the Elusive SES

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clockwise. Connect the antenna (preferably an 18-foot vertical or an 8-foot CB whip) to the receiver input jack. Ground the receiver using a good earth ground. Connect an oscilloscope (using the vertical input) to the test-point jack on the receiver. Turn out L1 one full turn. A large sine wave will appear on the screen, showing a prominent "hump."

If you have used the components specified in the schematic, this will be a signal coming from 17.8 kHz (NAA, Coutler, Maine). The format of this transmitted signal is such that it cannot be used in solar flare studies so continue to turn the core of L1 out. The 17.8-kHz signal should drop out and a small hump will appear. This will be 18.6 kHz-NAA's

1-megawatt station. If the signal L1 until it's almost fully open has good strength, by all means or until a large signal

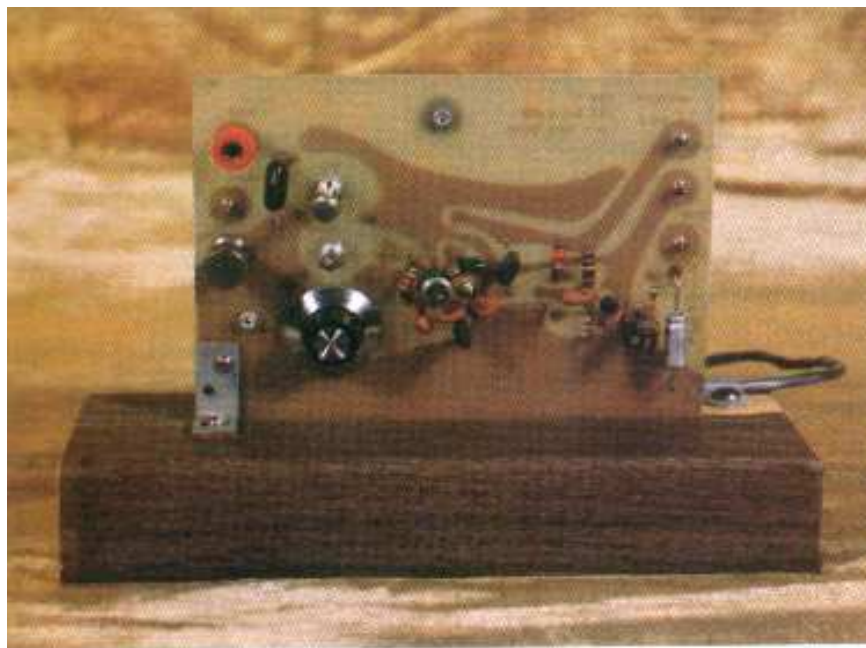


Photo B. Prototype receiver—front view.

record it. If the signal is weak, reappears on the screen. as in my case, continue with the turning by opening the core of

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Editors Comments

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the Swiss national amateur radio society, the licensing authority there will be writing to all Swiss CEPT Class 2 amateurs to give them "provisional authorization" to immediately start using the High Frequency bands.

Meantime the Radio Society of Great Britain says that nations Radio communications Agency has already stated that it will bring in code-free High Frequency licences as soon as it is practical to do so. An announcement will be

made as soon as permission is given for United Kingdom Full and Intermediate Class B amateurs to start using the H-F bands. (RSGB)

[Maybe we should ban the use of Morse to make it more popular. Ed]

**Don't forget the Boot
Sale on the 30th at
12:00**

RADIO LAW: ARRL TELLS FCC TO SET INTERFER- ENCE REJECTION STAN- DARDS

The ARRL has told the FCC that improved interference standards for consumer electronic devices is among the most pressing needs being faced by the ham radio community. This, as the Commission considers the interference immunity performance of receivers. Amateur Radio Newslines' Bruce Tennant, K6PZW, has more:

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In Search of the Elusive SES

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This signal will be 21.4 kHz (NSS) radiating a 200-kW

number of reasons. First, it is easy to access (you cannot mistake the signal) and tuning

(American Association of Variable Star Observers) show that a lot of small flares are

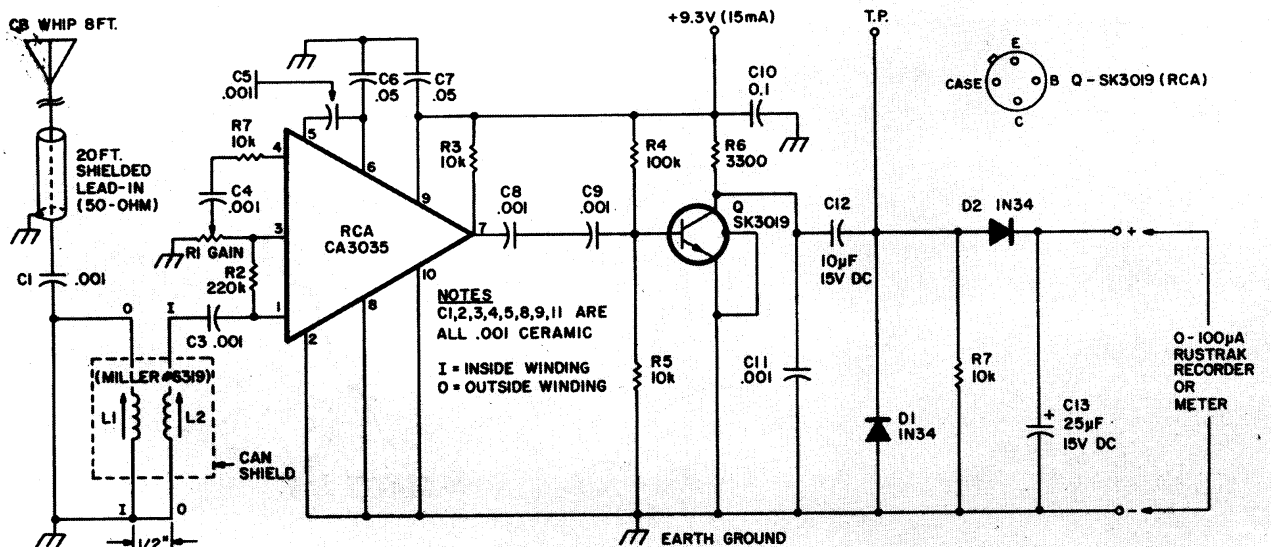


Fig. 2. Circuit for a tunable SES receiver.

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signal. This station is an is straightforward. Second, my excellent choice for flare records, along with the propagation recording for a records at the AAVSO

recorded at this frequency while they are often completely missed at other low frequencies.

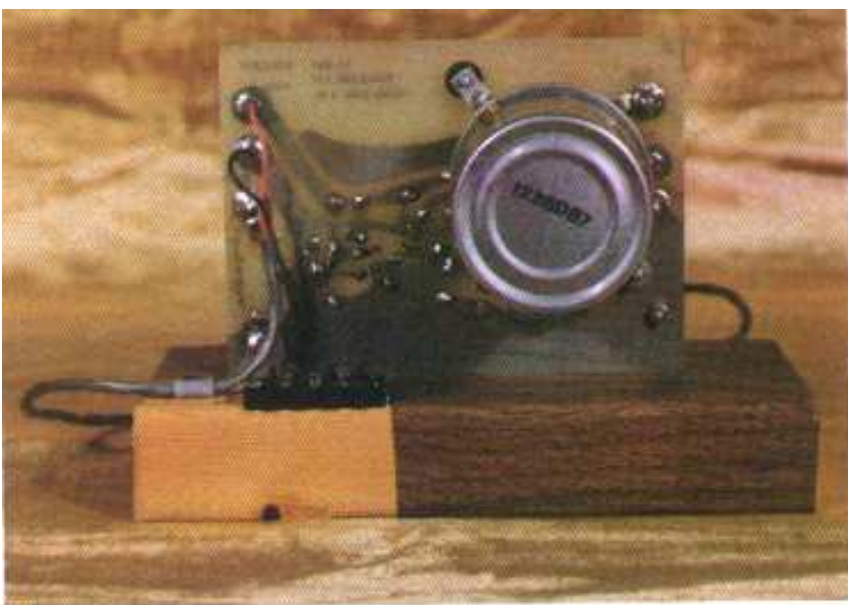


Photo C. Prototype receiver—rear view, showing the shielding method used.

If an oscilloscope is not available for tuning, the receiver can be tuned with a 0-200uA meter placed across the receiver's recorder output terminals. When coil L1 is turned, a prominent peak will indicate that you have tuned the signal.

Final Tuning Procedure

Disconnect the oscilloscope or tuning meter and place a recorder at the designated terminals. Turn up gain control

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In Search of the Elusive SES

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R1 to give you a mid-scale reading of either 50uA or close to 1mA if you are using a 0-1-mA recorder. By turning L1 in and out a few threads peak the signal. Fine-tune the signal with 5-6 turns of L2. In some cases, it will show a prominent increase; in others it will not. (Since all coils are not the same, the tuning of L2 may vary.) To test for oscillation, disconnect the antenna; the signal on the recorder should drop to zero or almost to zero. When the ground is disconnected, the signal definitely should drop to zero.

Other Hints and Correlation Ideas

The receiver itself can be housed in any standard metal or wood enclosure, but be sure to make use of adequate shielding around the inductor coils to ensure proper mixing. I use small lined aluminium cans attached to brackets, which are mounted to the circuit board. These make excellent shields.

Good correlation on an official basis for flare recording and verification may be obtained by sending for a weekly solar data bulletin (free) printed by the government. Write to the Space Environment Services Centre, Space Environment Laboratory

ERL, NOAA, Boulder CO 80302. Ask for the preliminary report and forecast of solar geophysical data.

Circuit boards for building the receiver are available from me for \$8.00 each, plus postage.

For those further interested in solar flares and flare recording, my Handbook of Solar Flare Monitoring and Propagation Forecasting is available from Tab Books. M

From page 42, 73 Magazine December, 1980

Carl M. Chernan WA3UER
1135 Constitution Drive
Tarentum PA 15084

Editors Comments

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The ARRL made its position known in comments July 21st in response to an FCC Notice of Inquiry titled Interference Immunity Performance Specifications for Radio Receivers. That probe was released last March as ET docket 03-65. In its filing the ARRL says that no receiver immunity standards are necessary or practical in the "essentially experimental" Amateur Service. Instead, says the ARRL, the real need for receiver immunity specifications is in the area of consumer electronics and the FCC must establish stronger interference rejection standards for such devices.

The ARRL's 21 page reply also recounted the recent history of efforts to come to grips with interference from RF sources, including amateur stations, to receivers used in other services, such as TV and radio broadcasting, and to consumer electronics. The ARRL suggested that the FCC mandate a standard for all consumer electronics or adopt a labelling or grading system. It also suggested that the FCC not rely exclusively on manufacturers to set standards as a way of lessening the problem.

The politically powerful Electronic Industries Association which represents the manufacturers of consumer elec-

tronic gear is categorically opposed mandatory RFI immunity standards. (ARRL) [no surprise—Ed]

Try not to get the flu this month. 73 JB

The West Rand Amateur Radio Club

26.14122 South - 27.91870 East

P.O. Box 562
Roodepoort
1725

Phone: +27 11 475 0566
Email: john.brock@pixie.co.za

Bulletins (Sundays at ...)
11h15 Start call in of stations
11h30 Main bulletin start

Frequencies
439.000MHz 7.6MHz split
(West Rand Repeater)
145,625 MHz (West Rand Repeater)
10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

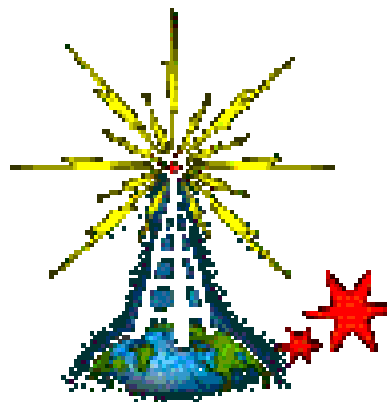
Chairman/Treasurer	Dave	ZR6AOC	475 0566 (H)	zr6aoc@mweb.co.za
Secretary	John	ZS6FJ	672 4359 (A/H)	
Technical	Phillip	ZS6PVT	083 267 3835	workshop@multisource.co.za
Member	Craig	ZR6CRW	795 1550 (H)	craig.woods@absamail.co.za

West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June this year. This included the new Adobe reader. It has been updated, check with the chairman for details.



We need your input! Email us articles, comments and suggestions please.
john.brock@pixie.co.za