



# HAMS Waywite News

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[www.marc.org.za](http://www.marc.org.za)

MIDLANDS AMATEUR RADIO CLUB  
P.O.Box 1076, HILTON, 3245



AFFILIATED TO  
THE SARL & IN  
ASSOCIATION  
WITH THE NATAL  
CARBINEERS

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☎

**Wessel du Preez, ZS5BLY**  
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HHN Editor  
☎(033) 702-1968

## The Chairman's Fax

I must place on record to all our members that the only members who are excused from not attending our monthly Committee and General meetings for various reasons are: ZS5NZ, ZS5TZ, ZS5AH, ZS5WI and ZS5P. To my knowledge there are no others that have sent in their permanent apologies for not being able to attend our functions from time to time. It is regarded as normal and correct that, if you cannot attend a Meeting, to present your apologies by some means eg. telephone, letter, e-mail, cellphone, radio net, friend or any other means at your disposal. Come on, chaps, why be bad mannered about something so simple, eg. if your good lady wants you to attend a wedding, by all means attend the wedding, but if you have a Ham meeting on the same day, let someone know that you can't make it. That is the right and proper thing to do.

Some bad news is that Iona, XYL of Hill, ZS5HL, has had a fall and has had to undergo surgery, we wish her a speedy recovery and return to Hill at the home QTH.

The club has a Mosely TA-33 beam and manual in good condition, which is up for sale @ R400.00. If anyone is interested contact ZS5MQ by any of the above means.

Don't forget the Thursday MARC net at 19:30 hrs on 3620 kHz.

**NEXT MEETING ON 21-04-2007**

CU THERE

PS! Don't forget to send your apologies if you can't make it!

73 de ZS5MQ

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The Club meets on the third Saturday of each month, except December, at 11h00 at the Natal Carbineers Conference Center, Geere Street, PMB. Sunday Morning Bulletins (MARC and SARL) as well as the Club Net are on the air from 07h45 on 3620 kHz and the 145.750 MHz repeater

Contributions and comments:  
[dupreezw@futurenet.co.za](mailto:dupreezw@futurenet.co.za)

Sunday Club Net Controller: Mickey Esterhuysen, ZS5QB  
National News Bulletin: Robin Seal, ZS5MRS

## From the Editor

Before starting the module on electricity with my grade 11 learners in Physical Science, I asked them: “What would happen if I were to remove all electricity from your homes today?” Their answers were swift and probably graded in their order of priority: No TV, no videos, no Hi-Fi, no microwave, no hot showers, no lights. “And what about your cell phones, your I-pods and your Walkmans” I asked. “What is a Walkman, Sir?”. We call it the generation gap – what was Hi-Tech when we were parents of teenagers is now history, a total mystery to the young people of today. If we want to get the younger generation interested in amateur radio, we should forget the CW and AM that so intrigued us when we were young. What about throwing them the challenge of software defined radios and digital speech? Add satellite communications, meteor scatter, our digital modes, complete with image communication, and maybe we can get their attention. There is only one way by which we learn, and that is by exposure, be it by lessons, books or by example. Are you setting an example? The Amateur code says that an amateur is progressive, are we?

If my memory serves me right, it was Lord Kelvin that said: “If you can't measure it and express it in numbers, you do not know what you are talking about”. My first boss used to say “To measure is to know; provided you know what you are measuring”. This last quote may sound Irish, but think about it and you will agree that it is true. We very often do not know what we are measuring, though we may think that we know – ever measure DC with the DVM set to AC? Elsewhere in this issue you will find a circuit diagram of a very simple but useful piece of test equipment – a field strength meter! Though it is not a calibrated piece of equipment, it can be used for comparative tests: did the last tweak on the mobile antenna really improve its performance? If you don't have one in the shack, give it a go!

Wessel, ZS5BLY

## NEWS and FEEDBACK

⊗ Preliminary investigations, most of it by our chairman, showed that organizing a Hobbies Fair was a much larger job than initially anticipated. The committee has therefore decided to postpone this event until next year. The committee is to continue with the establishment of a data base containing names and contact details of other clubs and/or organizations that may be interested in such an event. If you know about such a club, please let Bert have the information for the data base.

⊗ The installation of the Underberg repeater has encountered a problem with the duplexer. It has therefore been postponed until this problem has been resolved. The 2m repeater, UHF link, power supply and battery charger are all functional.

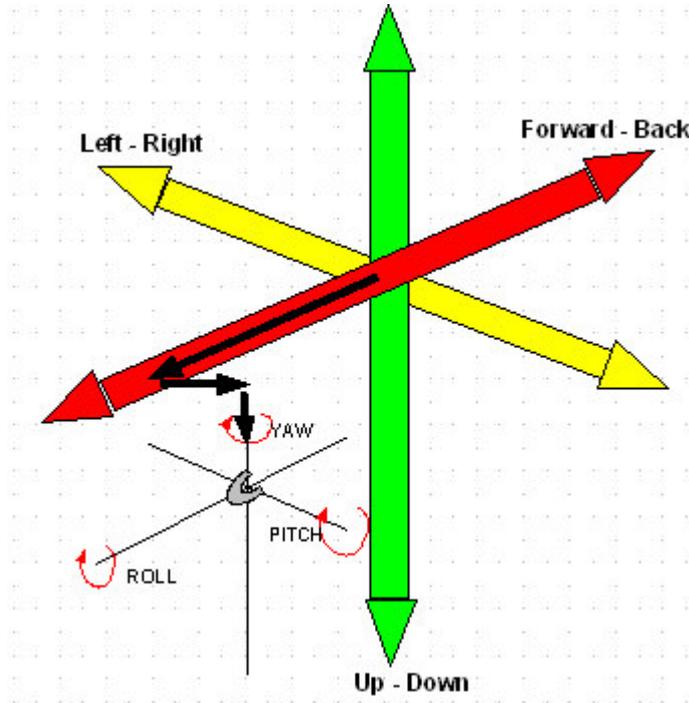
⊗ The mailing list for the electronic distribution of HHN has been updated. Should anyone still receiving the printed version wish to change to e-mail, please let me know.

⊗ The latest issue of QST carries two articles that may be of interest to the ever-inquisitive; one deals with digital voice and the other covers meteor scatter. For more information on these topics go to <http://n1su.com/windrm/docs/1.2/> for the digital voice information and to [www.pulsar.princeton.edu/~joe/K1JT/](http://www.pulsar.princeton.edu/~joe/K1JT/) for the meteor scatter information. In both cases the software is free.

⊗ If you come across a web site that may be of interest to your fellow hams, please share it with all of us. It can save a lot of call-time if you know where to go.

## Robots and Robotics -2

The essential role of a robot arm is to move a gripper or tool to given orientations at a given set of points. Mathematically, to be able to orient an object in any way at any point in space requires an arm with six articulations or degrees of freedom: three translational ( Left-Right, Forward-Back and Up-Down to get to any point, and three rotational (Pitch, Roll and Yaw) to get any orientation. This is illustrated in the diagram below.

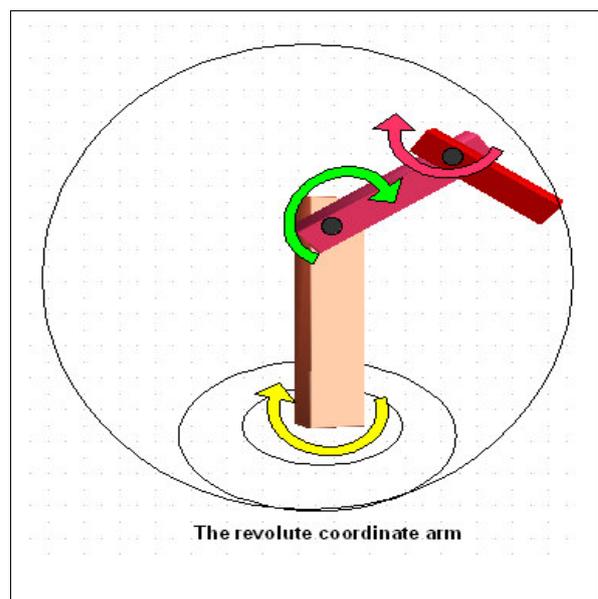


Six motion requirements

The work envelope ( all the points in space that can be touched by the end of the robot arm ) varies in shape depending on the actual configuration chosen for the design of the arm. One common structural classification of robot arms involves grouping according to the coordinate system of the three major axes (the translational axes) which provide the vertical lift, the in /out reaching stroke, and the rotational or traversing motion about the vertical lift axis of the robot. Six basic types can be distinguished:

1. Cylindrical coordinate robot
2. Spherical or polar coordinate robot
3. Cartesian or rectangular coordinate robot
4. Revolute (jointed arm) coordinate robot
5. SCARA-type
6. Parallel robot

Although robots do not as yet possess many of the important capabilities which come naturally to a human being, such as the ability to react intelligently to unforeseen problems and changing work environments, the ability to learn from experience, and the use of subtle hand / eye coordination, nevertheless, through use of highly structured work environments, robots are employed in a very wide spectrum of activities.



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# A Scientific Method for Locating Lost Parts

Thisisa Dajoke, 4U2C

At some time or another most hams find themselves at the workbench modifying, repairing, or simply replacing that foreign plug on the new rig. Any such an operation can lead to disaster when an essential, non-replaceable component falls on the floor and disappears. In this short article I will provide you with a well proven and scientifically developed method to locate the lost component.

As every school boy knows, any object is subjected to the law of gravity and will therefore accelerate towards the point of lowest potential energy when it is not properly supported by a pair of pliers or a firm working surface. The average working height of a workbench is 0,76 m and, when inadvertently released, the component will experience an acceleration of 9,8 m/s<sup>2</sup> in a direction towards the floor. In the case of small components, the effect of air resistance may be ignored and the velocity with which the component strikes the floor may be calculated from:

$$v^2 = u^2 + 2.g.s$$

where v = final velocity, u = initial velocity, s = distance traveled and g = 9,8m/s<sup>2</sup>.  
As the object starts from rest, the initial velocity is zero and we have that u = 0. We may thus write

$$v^2 = 2.g.s \quad \text{or, when inserting our known values for g and s:}$$
$$v^2 = 2 \times 9.8 \times 0,76 = 14,896 \text{ and therefore}$$

$$v = \sqrt{14,896} = 3.859 \text{ m/s.}$$

We may now calculate the momentum of the component when it strikes the floor knowing that

$$\rho = m.v \text{ or, substituting for v and assuming a component mass of } 0,0259 \text{ kg, } \rho = 0,01 \text{ kg m/s.}$$

The Law of Conservation of Momentum states that when two or more objects act on each other, their total momentum remains constant ( in any direction) provided that no external forces are acting. In accordance with this, the object will take off in a direction depending on its shape factor,  $\xi$ , the angle of incidence,  $\Psi$ , and the coefficient of friction of the floor,  $\delta$ . The direction of travel,  $\theta$ , as well as the distance traveled, S, is then given by:

$$s = \oint \sum_0^{13} \psi_x + \xi^{-2} - \delta^3 \qquad \theta = \sum_{-2}^2 \psi^{-5} - \xi^3 \pm \delta_7$$

Substituting with our known coefficients and solving the above equations, we get that:

$$\text{direction ( in radians) } = 3,704 \times \text{€} \quad \text{where € is any integer between 0 and 11}$$
$$\text{distance (in metres) } = 1.011 \times \text{ř} \quad \text{where ř is (0,39 x room temperature in } ^\circ\text{C )}$$

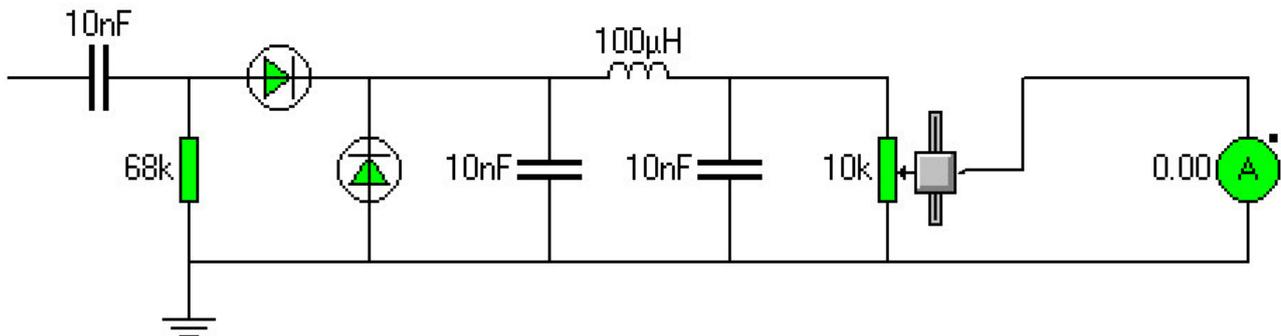
It now becomes an easy matter to use a tape measure and protractor to locate the lost component.

*[Thisisa is not active at the moment. She was unfortunately arrested by the state police and returned to the CIMH (Cherjelka Institute of Mental Health) where she now awaits further treatment. Ed.]*

## A Simple RF Field Strength Meter

*Rhode und Swartz* do not make one like this, neither do *HP*! They have the genuine article, those calibrated ones that all of us would like to own. This simple instrument will, however, help you to compare field strengths when making adjustments to the transmitter or antenna.

The strength of a wave – at a distance from the antenna - is its *field intensity* or *field strength*. This is measured as the voltage between two points lying on an electric line of force in the plane of the wave front. The standard of measure is the voltage developed in a wire 1 m long and is expressed as *volts per metre*. In a typical amateur situation the voltage will be very low, in the order of micro volts, so we need to use a very sensitive micro-amp meter: 50 or 100  $\mu\text{A}$  will be fine. The diodes, which should be germanium or Schottky devices, act as both rectifier and voltage doubler in the circuit. Wiring is not critical as long as all leads are kept as short as possible and the unit is built into a metal enclosure. My unit has a BNC socket at the input so that I can change the antenna.



This is a simple and effective tool, but it can also give misleading results. Like a hand held radio, the FSM requires a good RF ground and is rather sensitive to proximity effects. It has no tuned circuits in its input, so the reading displayed is the sum of ALL the RF fields in the vicinity. In most normal applications the wanted signal will (hopefully!) be the strongest one and comparative measurements will be able. On account of the non-linearity of the diodes at very low voltages, the device will not have a linear response but this does not really affect the type of measurement for which the FSM is used.

For those of you that do not drive VW's, more sophisticated designs are available for the home constructor. These are tuned units and some even have their meters calibrated in dB for some serious measurements. A design that shows up regularly in the *ARRL Antenna Book*, is based on an article by Lew McCoy published in the January, 1973 issue of QST.

If portability is not an issue, your station receiver with a calibrated S-meter is always there!

### Radio Accessories & Data Modems

P.O. Box 691, Gallo Manor, 2052. Tel: +27 (11) 802-2976

For all your Ham requirements using:

**Kenwood, Yaesu, Alinco, Hustler, AOR, MFJ, Icom, bhi**

[www.radioacc.co.za](http://www.radioacc.co.za)

## Bulletin Readers

April 15	Bert	ZS5MQ
April 22	Mike	ZS5BGM
April 29	Wessel	ZS5BLY
May 06	Rod	ZS5RK
May 13	Craig	ZS5CID
May 20	Bert	ZS5MQ
May 27	Mike	ZS5BGM

## On the Giggle-Hertz Bands

Dear Sir/Madam

Please note that an entry on the Register of Electors in your name has been deleted for the following reason:

DEATH

If you have any objections, please notify me, in writing, before the 25<sup>th</sup> November, 1988, and state the grounds for your objection.

Yours faithfully

*(Communication from Carlow County Council to an erstwhile elector)*

### They said it

Certainly the gods are ironical: they always punish one for one's virtues rather than for one's sins.

Ernest Dowson

Bankers are like anybody else, except richer.

Ogden Nash

He was a self-made man who owed his lack of success to nobody.

Joseph Heller  
( *Catch-22* )

### Next Meeting

The next meeting of the club will take place on Saturday, 21<sup>st</sup> April at 11:00 at the usual venue. Remember your competition entries!

### MARC software CD

The CD is with the beta-testers and will be available as soon as I have had their comments and (if possible) included their suggestions.