

# CQ BOLAND



NUUSBRIEF VAN  
DIE BOLAND AMATEURRADIO KLUB

Maart 2010

## KOMITEE VAN BOLAND AMATEURRADIO KLUB

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Jan Van der Vyver	ZS1VDV	083-3795859
Douglas Defty	ZS1DUG	021-9436300
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## KLUB BULLETINS

Tyd:                    Sondae om 7:45  
 Frekwensies:   3670kHz, 7094kHz LSB en 145,700 FM  
 Kom gesels saam op Sondagaande om 20:00 op 3670kHz

## KENNISGEWING VAN DIE VOLGENDE BARK VERGADERING

U word vriendelik uitgenooi na 'n BARK vergadering op Saterdag 20 Maart 2010 om 11:00 op die plaas Slot van die Paarl. Die vergadering behoort so teen 12 uur klaar te wees en daarna sal die braaivleis vure aangesteek word. Moenie van die katebak verkoping vergeet nie. Bring u eie kos, eetgerei, drinkgoed, stoele, rooster ens. saam. Verder in hierdie uitgawe is 'n beskrywing om by die vergadering uit te kom.

BARK  
Vergadering...



## BYDRAES TOT CQ BOLAND

Die redaksie van CQ BOLAND verwelkom alle bydraes vanaf Boland se Amateurs en vriende van die klub. Bydraes mag egter volgens die diskresie van die redakteur aangepas en geplaas word om sodoende die gepastheid en kwaliteit van inligting en artikels te verseker. Bydraes moet ten minste vier weke voor die datum van die volgende vergadering aan die redaksie met behulp van E-pos, pakket radio of op disket gestuur word.



Stuur u bydraes aan:

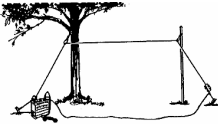
Pakket:    ZS1RX@ZS0BEL.TBG.WCP.ZAF.AF

E-pos:     [ZS1RX@MAILBOX.CO.ZA](mailto:ZS1RX@MAILBOX.CO.ZA)

Posadres:  CQ Boland Posbus 273 STRAND 7139

## VAN DIE VOORSITTER.

2010 belowe om 'n jaar vol aktiwiteite en geleenthede te wees. Ons moet net hierdie geleenthede benut. Ek wil dan ook versoek dat as u weet van enige herdenkings wat regverdig dat ons 'n spesiale geleentheid stasie



bedryf, u die komitee betyds laat weet en dat ons die wêreld per radio vertel van ons trotse geskiedenis.

Dan 'n groot dankie aan Deon, ZR1DE, wat by die vorige ledevergadering homself beskikbaar gestel het as BARK se Skakelbeampte.

BACAR was 'n groot teleurstelling, maar ek dink dat ons van BARK se kant af alles in ons vermoë gedoen het om die saak te probeer beredder.

Ons ledetal staan tans op 128. Ons is die grootste Afrikaanse Amateur Radioklub in die wêreld.

Ondersteun asseblief die SARL. Dit sal goed wees as u die SARL se algemene jaarvergadering in Port Elizabeth kan bywoon.

Ek sien uit daarna om u by ons volgende ledevergadering te sien.

Johan, ZS1RX

## VERBIND EN VIND KOMPETISIE

Die Verbind en Vind Kompetisie het op Vrydag en Saterdag, 11 en 12 Desember plaasgevind. Baie dankie aan almal wat betrokke was by die reëlings van hierdie gebeurtenis. Dankie ook aan almal wat deelgeneem het. Dit was 'n baie prettige kompetisie.

## RADIO AMATEUR EKSAMEN

Karl, ZS1KC, is reeds besig met die klas A klasse. Daar was nie 'n Februarie ZU eksamen nie. Jan, ZS1VDV, berig dat daar te min belangstelling was. Die volgende klas A en B eksamen is in Mei 2010.

BARK wens die kandidate alle voorspoed toe met die eksamens



BARK het gedurende September 2009 die roepsein ZS10WCS gebruik om die wêreld bewus te maak van die wêreldbeker sokker. Hierdie was 'n inisiatief van die SARL om die roepsein vir een maand aan 'n klub toe te staan. BARK het uitstekend gedoen met die kontakte en is tans die mikpunt van ander klubs. Welgedaan BARK!

## BARK VERGADERING VAN SATERDAG, 20 MAART 2010

Deur Johan, ZS1RX

Ons volgende BARK vergadering vind plaas op Saterdag, 20 Maart 2010, op die plaas Slot van die Paarl te Agter-Paarl. Olivier, ZS1OLI, is ons gasheer.

As u van Kaapstad se rigting noord ry op die N1, neem u die Klappmuts/Wellington afrit. Dit is die R44. Die R44 raak later 'n dubbel baan. Hou aan tot by die Noord Agter-Paarl Koelkamer. Draai daar links. Maak seker dat u tot by die koelkamers ry voordat u van die R44 afdraai. So 'n kilometer verder sal u die afdraai links na die plaas vind. Die plaas se naam is "Die Slot van die Paarl". U sal sommer gou die antennas sien. Volg die pad tot by die antennas. Die GPS verwysing is 33°39.746'S en 18°54.769'O

Daar sal bystand wees op die 145.650 herhaler. Sien u daar!



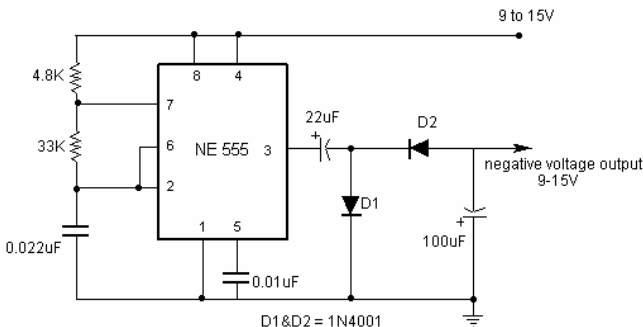
### SARL AJV

Die SARL se Algemene Jaarvergadering vind vanjaar in Port Elizabeth plaas oor tydperk 23 tot 25 April. Van BARK se lede sal hierdie vergadering bywoon. Gee asseblief u volmag vorm aan een van die klublede indien u nie self die vergadering kan bywoon nie.



### HAMNET BOLAND

Kom ons ondersteun asseblief hierdie organisasie. Sluit asseblief aan al kan u nie in al die aktiwiteite deel nie.



### POSITIEF NA NEGATIEWE, SPANNINGS OMSKAKELAAR

In hierdie Stroombaan word 'n positiewe spanning gebruik om 'n negatiewe spanning op te wek.

## KOM ONS GESELS TEGNIES

*Ek het die artikel hier onder op die internet gekry. Ek dink dit is tyd dat ons 'n BARK Jakkalsjag doen.*

*Die webwerf is: <http://webhome.idirect.com/~griffith/tdoa.htm>*

## A TIME DIFFERENCE OF ARRIVAL (TDOA) ANTENNA UNIT FOR FOX-HUNTING

At some point in your hunt for the elusive "fox", you will (with luck) be so close that simple field-strength direction-finding techniques may no longer work. The "fox's" signal will be so strong that it will swamp your attenuator and leak through the plastic parts of your radio's case, resulting in "S9+" signal-strength readings in every direction, regardless of attenuator settings or antenna orientation. A "Time Difference of Arrival (TDOA)" antenna unit will put you back on the "hunt".

### HOW BIG A TRUCK WILL I NEED?

A TDOA antenna unit is simple and easy to build, and will work with any 2m FM mobile or handheld. There are many different designs of TDOA units, and some have additional "bells and whistles" (such as left/right indicators), but the basic design (which is all you really need) consists of a small dual-antenna array and an electronic antenna-switching unit.

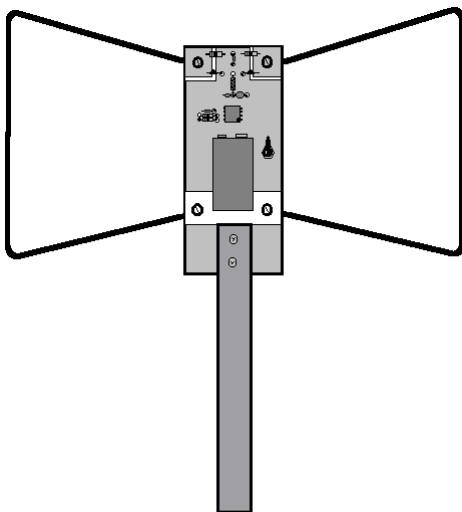


Fig 1 - The assembled TDOA antenna unit - coaxial cable to receiver runs behind the PCB and through the PVC pipe handle.

The antenna array usually consists of two vertical dipole antennas separated 12 to 36 inches apart, often mounted on a T-shaped support so that the array can be rotated. The purpose of the antenna-switching unit is to alternately and rapidly switch the input of your FM receiver between the two dipoles. The switching rate is typically 1000 times per second. Switching is accomplished by a square-wave oscillator which alternately forward- or reverse-biases diodes connected in the circuit path between each dipole and the receiver. Common silicon switching diodes will work OK, but PIN diodes work best.

## HOW DOES IT INDICATE DIRECTION ?



The TDOA works by detecting the difference in the phase of the RF signal received by each dipole. If both dipoles are exactly the same distance from the RF source (the "fox"), the phase of the RF signal will be the same at each antenna. If you rotate the array, or the RF source moves to the left or right, then one dipole will be closer to the source than the other one, causing a small phase difference between the signals received. Your FM receiver will then detect an abrupt change in the phase of the RF signal it receives as the antenna switching unit switches rapidly back and forth between the two dipoles. To the receiver, the signal looks like square-wave-modulated FM ! Your receiver's speaker will emit an audio tone at the antenna-switching frequency. As the phase difference increases, the tone becomes louder. When both dipoles are equidistant from the source, the tone almost completely disappears.

One disadvantage of the TDOA is that when you have found the "null" or antenna position where the tone disappears, you cannot tell if the source is directly in front of you or directly behind you. Fortunately, there are other ways to determine this. A quick way, if you are using a handheld, is to use the "body shield" method - disconnect the antenna, hold the handheld close to your chest so that you can see the signal strength indicator, and turn your body. When the indicated signal strength is minimum, the source is somewhere behind you. Another technique involves converting the TDOA antenna to one which has a cardioid or heart-shaped radiation pattern - the null (which corresponds to the "notch" in the heart-shape) can be used to point a rough bearing to the source.

## A QUICK (1-2 EVENING) TDOA ANTENNA UNIT

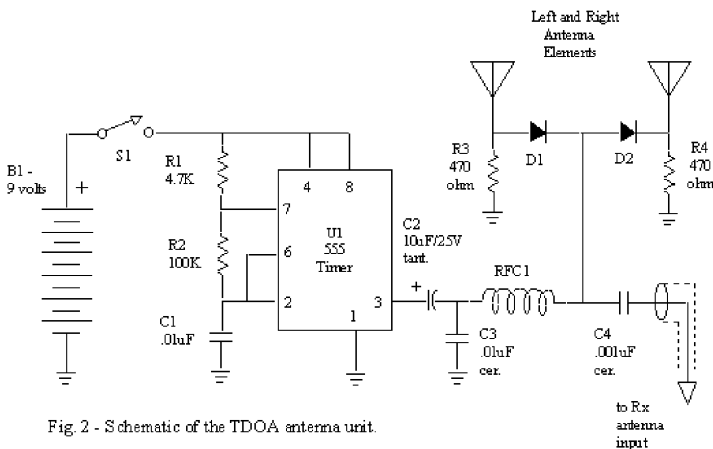


Fig. 2 - Schematic of the TDOA antenna unit.

You can build a simple TDOA unit in an evening or two. The circuit, shown in Fig. 2, is based on one in an article by Paul Bohrer (ref 1). U1 is a 555 timer powered by a 9V battery, oscillating at about 1kHz. R1, R2 and C1

determine the frequency of oscillation. The output of U1 is a square-wave from +9V to ground. C2 allows the square-wave to be level-shifted to between +4.5V and -4.5V. The positive half of the square-wave's cycle turns on (forward-biases) D1 and turns off (reverse-biases) D2; the negative half of the cycle does the opposite. R3 and R4 limit the forward bias current for each diode to about 9mA. When the diode is turned on, the RF signal received by that diode's dipole is conducted through the diode and coupled through C4 to the coaxial cable to the receiver. When the diode is turned off, the RF signal (from that diode's dipole) is blocked. RFC1 presents a high impedance to the RF signal so that it is not shunted by the oscillator circuit, but passes the relatively low-frequency square-wave to the diodes. RFC1 together with C3 also comprise a low-pass filter to prevent the high-frequency components of the square-wave from getting into the antenna circuit and the receiver. If you forget to install C3 (I did), you'll hear a continuous "hash" of switching noise.

A rough PCB layout with approximate dimensions is shown in Fig. 3. Layout is not critical, but try to keep the wiring between the antenna elements, diodes and coax as short as possible. I also tried to keep the battery and coaxial cable exactly centered so that they would not affect one antenna element more than the other, but I'm not certain if this is really necessary. The coaxial cable lead to the receiver runs down the back of the PCB and through the PVC-pipe handle.

The PCB can be "etched" using a sharp exacto-knife (watch your fingers!) and a drill-bit. Score around the areas of copper-clad that you want to remove with the exacto-knife, then peel away the copper. I use a pad-cutter tool to isolate pads in the copper, but you can clear the copper around holes with a sharp 1/8" drill bit - for a handle, use a 1/8"-shaft knob with set-screws. This prevents shorts between the copper ground-plane and component leads which pass through holes in the PCB.

I made a "bow-tie" antenna based on the "Handi-Finder" article (ref 2). Each element is a square "U", 6 inches across the bottom with 6-1/2" long arms. Each arm has a loop at each end for mounting to the PCB with #6 nuts and screws. It does not give as loud a tone or as

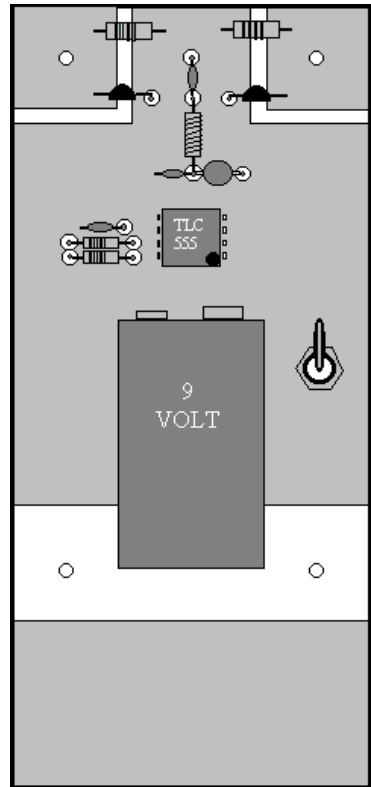


Fig. 3 - PCB component layout.

sharp a null as two dipoles spaced 3 feet apart, but it's a lot smaller. I used coat-hanger wire, but stiff #12 copper wire or brass brazing rod would probably be better. The handle can be anything, preferably non-metallic, such as a short length of PVC pipe, wooden dowel or broomstick with a slot sawed in one end for the PCB.

Any 555 timer IC will work with this unit (there must be over 15 different semiconductor companies making them) but the CMOS part will nearly double your battery life. You can adjust R1 and C2 to vary the oscillator frequency (if you find a particular tone annoying). RFC1 is not especially critical, figure 1kohm impedance or better at 144MHz. If you have something in your junk-box, try it out by tuning your rig to a QSO in progress with the TDOA antenna unit connected but not switched on, then touch the leads of the RFC between ground and the connection between D1 and D2. If the signal strength drops appreciably, then the RFC does not have a high enough impedance at VHF.

### USING THE TDOA ANTENNA UNIT



TDOA antenna units are not designed for transmitting. If your handheld has a "TX inhibit" feature, it's a good idea to enable it when foxhunting with a TDOA. Transmitting into the TDOA may damage your HT, the TDOA, or both.

The TDOA works best with a strong, vertically-polarized signal. Strong multipath reflections caused by nearby vehicles, buildings, fences, power lines, steel lamp-posts, etc. can make the null difficult to detect, or even appear on a wrong bearing. (Note that wily foxes look for places just like these to hide). If possible, look for open areas clear of obstructions and reflectors when taking bearings. If the bearing appears to change as you move around, your location may be affected by multipath. With practice, you'll be able to tell from the tone whether you have a good signal or one distorted by multipath.

### PARTS LIST FOR THE TDOA ANTENNA UNIT (FIG. 1)

- |                              |  |
|------------------------------|--|
| 1. U1 - CMOS 555 timer       | 10. RFC1 - RF choke, 8 turns magnet wire space-wound over 1/4W carbon comp resistor (100k or greater). |
| 2. R1 - 4k7, 1/4W, 5%        | 11. S1 - Switch SPST (toggle or slide)   |
| 3. R2 - 100K, 1/4W, 5%       | 12. Misc. - PCB, 9volt battery, battery holder, stiff wire (for ant.), RG-58 coax and BNC connector.   |
| 4. R3,4 - 470R, 1/4W, 5%     |  |
| 5. C1 - 0.01uF, 50V ceramic  |  |
| 6. C2 - 10uF, 25V tantalum   |  |
| 7. C3 - 0.01uF, 50V ceramic  |  |
| 8. C4 - 0.001uF, 50V ceramic |  |
| 9. D1,2 - PIN diode, MPN3404 |  |



## AFRIKAANSE RAE HANDLEIDING

*Marten ZS6ZY*

Net om julle te laat weet dat die Afrikaanse RAE handleiding (90% voltooid) nou op die MRK webwerf beskikbaar is by: [www.zs6mrk.org](http://www.zs6mrk.org).

Elke hoofstukke kan afsonderlik afgelaai word en nie die hele dokument nie. Hoofstuk 29 moet nog vertaal word.

### BARK BULLETINS

Kontak asseblief vir Olivier, ZS1OLI, indien u bereid is om 'n Bulletin aan te bied. Kom ons verlig 'n bietjie die druk op hom.

## 2 PHASED VERTICALS FOR 80M

*By Peter, ZS1JX*

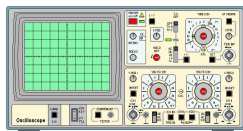
For a time I had been using the conventional quarter wave 75 ohm coax and the associated 100 ohm resistor for power splitting on 80 meters. I had this inside the shack and used various switchable lengths of coax to compensate for unequal distances to the verticals, thus also changing the phasing. It worked, but I wanted to try something else, and not having read about this I began experimenting.

As I have a second final which was standing around idle not doing any work my thoughts began materialising.

Stealing a little drive from my exciter I fed that into the second amplifier, now feeding each vertical by a different PA. To change the phasing I built me little switchable delay lines, also a 180 degrees phase inverting transformer. I do this on the low power side in the 100 mWatt range.

As I use 60 ohm coax to the antennas I had to construct a transformer for a 50 to 60 ohm impedance. The lengths of coax to the different antennas do not matter much as the delay units and or 180 degrees transformer will compensate for it.

A few things are needed: An oscilloscope to check the delay . The 180 degrees inverting transformer and a field strength meter.



When I do my tune-up I have the field strength meter as good as possible in line with the verticals. Then I tune up amp no1 on antenna 1 for best swr, then switching off the amp, then amp no2 on antenna 2 for best swr. Next both amplifiers are on, the swr will change and the field strength meter will show a different reading from either amp 1 or 2. Now I alter the delay until I can see a marked dip in field strength. By inserting short lengths of small coax into the delay line you will find out whether you need more or less delay and finally have the right

length. If you have minimum reading, then switch in the 180 degrees inverting transformer in and you will probably have maximum.

For making up the delay unit rather use more small sections than one big one,

as the cut-off frequency might come in. I stagger two delay units, one in doing 7 times abt 20 something degrees and the second abt 4 times 12 degrees. My thanks go to ZR1ACF for supplying lots of valuable components, data and encouragement.

### NUWE 650 HERHALER

Op die vorige ledevergadering was daar besluit om 'n nuwe 145.650 herhaler te koop om die bestaande herhaler op Hawekwa te vervang. Die nuwe BHF en UHF Verstey herhalers is aangekoop. Die installasie daarvan kon nog nie plaasvind nie weens 'n probleem met die skakeling tussen die twee eenhede. Kobus, ZS1K, is tans besig om die probleem op te los.

## LOW-TECH RADIOS CONNECT SOME HAITIANS

*By John D. Sutter, CNN*

**When cell phone coverage and Internet failed, some Haitians turned to amateur radio to communicate.**

### STORY HIGHLIGHTS

*Amateur radio provides a back-up link between Haiti and the world*

*Proponents say radio signals are often the only way to communicate after a disaster*

*A Haitian man says amateur radio helped him contact family in the U.S.*

*After initial outages, mobile phone service has been returning to Haiti*

In the brutal aftermath of Haiti's earthquake, Jean-Robert Gaillard turned to his low-tech radio for solace and for a lifeline.

When the earthquake hit, the 57-year-old from Petionville, Haiti, found most

of his normal lines of communication - his cell phone, the Internet, even his ability to walk down the street and talk to someone -- severed by the disaster.

But Gaillard used a neighbor's generator to power up his radio and connect to a handful of amateur radio enthusiasts in the United States -- many of whom were eagerly listening to radio static for calls like his.



Unlike many other people in Haiti, Gaillard was able to contact family members in the United States soon after the January 12 earthquake hit to tell them he had survived.

In those first hellish moments, that connection seemed like a miracle.

"It relieved the tension of my family members," he said, speaking by Skype from Haiti on Tuesday, which he says wasn't possible until more recently. "They could hear my voice. They knew that I was OK."



Much has been made about the role flashier technologies like Twitter, Skype and text messaging have played in helping disaster victims find loved ones and communicate with international aid workers. But it is worth noting that, when all else fails, the low-tech hum of a radio frequency is sometimes the only line of communication that's open.

### **iReport: Search list of the missing and the found**

Enthusiasts of amateur radio -- or ham radio -- are quick to use this as evidence that international aid groups and governments should rely more heavily on radio in disaster situations. Ham radio signals bounce off of a layer of charged particles in Earth's atmosphere, called the ionosphere, and, depending on the conditions, can work at times when other modes of communication fail.

But amateur radio is best viewed as one of many communications options in the wake of a disaster, said Keith Robertory, manager of disaster services technology at the American Red Cross, who has been helping in Haiti relief efforts from Washington.

The best communication technology in a disaster, he said, is whatever happens to work at the time.

"Amateur radio is a very powerful tool if the amateur radio operators are in the area where the disaster occurs," he said. "There's a window of opportunity for amateur radio operators right at the beginning [of a disaster]. .. That's where they are extremely valuable."

Because that window has now passed, cell phone connections, text messages, Twitter posts and Skype calls are becoming more significant, he said.

A 23-year-old woman, for example, was rescued in Haiti after text messages were sent from beneath the rubble of a school building.

### **Full coverage | Twitter updates**

Radio stations in Port-au-Prince, the Haitian capital, have been broadcasting almost since the earthquake, providing the only means of communication for some people, Agence France-Presse reports.

Some mobile phone towers in Haiti fell during the earthquake, and cell phone service was not returned to much of the country until at least two days after the tremors first shook the poor Caribbean nation, according to a mobile phone company operating in Haiti.



About a third of people in Haiti have access to mobile phones, compared to nearly 90 percent of people in the United States.

Reports suggest Internet connections also were spotty in the earthquake's aftermath; and only about 11 percent of Haitians have access to the Web in non-disaster situations, according to the CIA World Factbook.



Aid groups and journalists have relied on satellite phones, which work independently from local Internet and mobile phone infrastructure as long as the sky isn't too cloudy.

Such technology isn't commonly available for disaster victims, however.

Carol Wilson, compliance director for Trilogy International Partners, which provides mobile phone service to about 1 million people in Haiti, said 80 percent of the company's cell towers in Haiti were working.

The company is donating out \$5 worth of free phone calls to its customers and is giving people double the amount of minutes they would normally get so they can catch up with loved ones and communicate with aid groups, she said.

The main problem with mobile phone connections now, she said, may be fuel, since generators are used to power most cellular towers in Haiti.

In the immediate wake of the disaster, before cell phone coverage was restored, William F. Sturridge, a ham radio operator in Flagler Beach, Florida, said he was able to connect a

priest living on the remote Haitian village of Ile-a-Vache with his family members in the United States.

On Wednesday morning, the day after the earthquake hit, he said he heard a faint call of "hotel, hotel," which signifies the "HH" letters at the beginning of radio call signs in Haiti. He responded immediately.

"When other systems don't work, [radio] always works," he said. "It doesn't matter -- no matter where you are in the world ... you can get a [high-frequency] signal out and somebody will hear."

After connecting with the priest in Haiti, Sturridge said he called the man's brother to tell him his sibling had survived the earthquake.

"He was super worried," he said. "They hadn't heard from him, and it was wonderful to be able to pass the information and hear the relief in the voice."

Sturridge said he's been listening for



radio calls from Haiti almost non-stop, with no sleep, since the earthquake hit a week ago. The 51-year-old is disabled, and he said the radio gives him a lifeline to the outside world as well.

"It's very difficult for someone who is bed-bound to be able to work and be able to enjoy the benefits of helping other people, so this is one way I can do this very easily," he said.

"Certainly, I can't think of anything more rewarding than saving a life."

While the ability for even one person to communicate with the outside world immediately after a disaster has potentially huge impact, the number of people making calls from Haiti by amateur radio appears to be very small.



Brian Crow, who has been communicating with people in

Haiti by radio from outside Pittsburgh, Pennsylvania, said only three people in Haiti have made contact with the United States by ham radio since the earthquake.

Crow said his primary role has been taking calls, finding out what aid is needed, and relaying the information

to Web sites collecting news about missing people.

A number of sites -- including CNN's iReport and Google -- are creating databases with information about missing people in Haiti.

Other groups have put together population estimates based on satellite maps as a way for aid groups to target their relief efforts. And a site called Ushahidi is mapping text messages and calls for help in Haiti to give aid groups a better picture of dire needs for food, water and medical help.

Gaillard, the Haitian man who used ham radio to contact loved ones, said the week following Haiti's earthquake has been absolute hell.

But the fact that he could get on the radio and talk to people outside the situation made him feel connected to the world and has given him the strength to keep going.

"We are in God's hands now," he said.

## BACAR 2010 SNEUWEL

*Deur Johan, ZS1RX*

Op 24 Januarie 2010 sou BARK 'n BACAR ballon lanseer. BACAR staan vir Balloon Carrying Amateur Radio. Hierdie gebeurtenis sou plaasvind vanaf die Worcester vliegveld. Die BARK BACAR sou dien as 'n toetsplaatvorm vir 'n soortgelyke opstelling wat later om die wêreld sal sweef. John ZS6EF was verantwoordelik vir die "loonvrag". Die roepsein ZS1BWC was toegeken aan hierdie geleentheid.

Die vlug moes egter gestop word aangesien daar nie toestemming verkry kon word om die ballon te





lanseer nie. Na baie samesprekings met "Central Airspace Management Unit" (CAMU) wou hulle nie toestemming gee vir die lansering nie. Die lugweë in die Wes-Kaap is te besig. Alhoewel ons op 'n stil tyd wou lanseer en die wind in ons guns was om die ballon in 'n "stiller area" in te dryf, wou CAMU nie toestemming gee nie. 'N versoek om net 'n venster in tyd te kry, was ook nie aanvaar nie. CAMU het Upington aanbeveel.

BARK kon egter nie die verantwoordelikheid neem om sonder die toestemming van CAMU te lanseer nie.

Jammer aan almal wat uitgesien het om in die BACAR vlug te wou deel.

Dan 'n groot dankie aan almal in die Wes-Kaap wat hard gewerk het om BACAR te wou laat vlieg. Dit is nou ZS1YT, ZS1MM, ZS1VDV, ZS1KC, ZS1G, ZS1HM, ZS1DUG, ZR1DE en almal van u wat bydraes gelewer het. Van hierdie manne het meer as die spreekwoordelike ekstra myl geloop om alles gereël te kry.

### IN DIE SIEKEBOEG

Ek verneem dat die volgende mense in die siekeboeg is:

- Rina, die LV van JOE, ZS1AAB.
- Johanna, die LV van Pieter, ZS1UH.
- Siebert, ZR1SM.

Ons wens hulle alle beterskap toe.

## BARK VERGADERING VAN SATERDAG, 12 DESEMBER 2009



Ben, ZU1TN het die prys ontvang vanaf Kobus, ZS1K

*Deur Johan, ZS1RX*

Die vergadering het plaasgevind op die plaas "Die Slot van die Paarl"

Die vergadering het 11 uur begin en net na 12 het ons begin braai.

Kobus, ZS1K, van Letsplay Radio het 'n handradio aan Ben, ZU1TN oorhandig vir sy prestasie gedurende die Oktober klas B RAE. Baie geluk Ben.

Die Verbind en Vind kompetisie het hierdie vergadering vooraf gegaan, en die prysuitdeling het dan ook gedurende hierdie geleentheid plaasgevind.

Baie dankie aan Olivier, ZS1OLI en sy LV vir hul gasvryheid.

Die volgende 59 persone het die teenwoordigheidslys geteken:

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CARTER, JONATHAN ZU1N	LE ROUX, JOHAN ZS1RX
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COETZEE, DEON ZR1DE	MATHEE, HERMAN ZS1HM
COETZEE, RAOUL ZS1REC	MCKENZIE, CAROL
CONRADIE, KOBUS ZS1K	MCKENZIE, MAC ZS1XX
DEFTY, DOUG ZS1DUG	MOMBERG, DANELLE ZU1DCM
DISSEL, JOHAN ZR1JDL	NOTHLING, HANS ZS1WZ
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DU TOIT, REG ZS1ADC	SADIE, BENNA ZS1PBS
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ERASMUS, LOURENS ZS1BFE	SMITH, ALEX ZS1L
ERASMUS, RASSIE ZS1YT	STEYN, FRANCOIS ZS1FAS
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ESTERHUIZEN, NICO ZS1NC	TOXOPEUS, HENK ZS1ACD
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GUESS, RAY ZU1RG	VAN ZYL, BETSIE
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HEYDENRYCH, DEON ZS1G	VERSTER, PHILIP ZS1DV
HEYDENRYCH, HENNES	VERSTER, RYAN ZS1AJ
HUGO, JAN ZS1JH	VISSER, ANTON ZU1ASV
HYMAN, CLYDE ZS1CS	VISSER, ELSA
JENDRISSEK, PETER ZS1JX	VISSER, NATASHA
KOEGELENBERG, DANIE ZR1DJK	

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