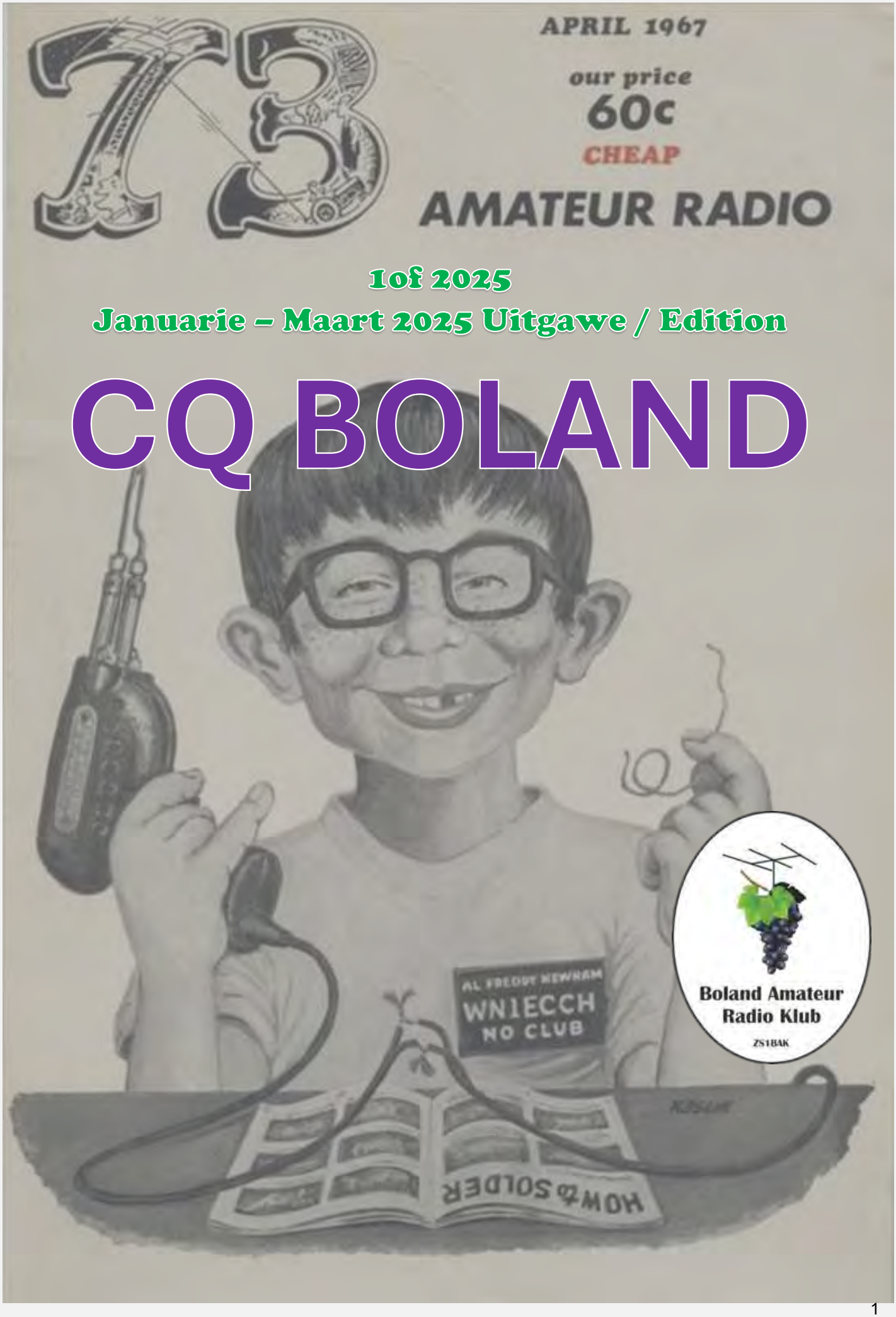
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AMATEUR RADIO
1of 2025
Januarie – Maart 2025 Uitgawe / Edition
CQ BOLAND
AL FREDDY NEWRAM
WN1ECCH
NO CLUB
HOW TO SOLDER
Boland Amateur
Radio Klub
ZS1BAK

JOU KOMITEE VAN BOLAND AMATEUR RADIO KLUB 2024/25:

	**Voorsitter** *+ CQ Boland / Web*	Marius Lubbe, ZS1ML	voorsitter@bark.org.za
	**Tesourier-tydelik**	Rassie Erasmus	rassiezs1yt@gmail.com
	**Sekretaris**	Francois Wooding ZS1FR	zs1fr@bark.org.za
	**RAE**	Jannie Kirsten ZS1JFK	rae@bark.org.za
	**Tegnies**	Schalk BurgerZR1SWB	schalk.gwb@gmail.com
	**Geleenthede**	Johan Brink ZS1JAB	events@bark.org.za
	**Administrasie**	Petrus Claassen ZS1CLA	petrusclaassen@gmail.com
	**Radio Sport**	Jan Lamprecht ZS1LAM	lamplumb@gmail.com

Gekoöpteerde lede:

Rassie Erasmus ZS1YT: Historikus vir die klub en SARL verteenwoordiger rassie@bark.org.za

Epos kan ook gerig word aan zs1bak@bark.org.za
Nuusbrokkies vir CQ Boland of die weeklikse bulletin na nuus@bark.org.za

KLUB BULLETINS
Tyd: Sondae om 9:30 op 7092kHz LSB en 145,650 FM
Frekwensies: 3730kHz, 7092kHz LSB en 145,650 FM en 145.700 FM

KLUB BULLETIN NUUS
Rassie Erasmus ZS1YT

BARK se bulletin word elke Sondag om 9h30 uitgesaai op die 145.700 of 145.650 herhaler. Daar is ‘n Echolink skakel aan die 700 herhaler sodat stasies wat nie op 2m kan luister nie, ook die bulletin kan ontvang en in-rapporteer.
Die HF uitsendings van die BARK bulletin is soms ‘n bietjie van ‘n probleem. Daar is net te min lede wat bereid is om die bulletin op 80m om 7h45 te lees of selfs ook op 40m te lees of te herlei vanaf die herhaleruitsending. Dit is so jammer want BARK het lede wat nie die heraleruitsendings kan ontvang nie maar graag die bulletin wil luister.

BARK Vlag

Indien jy bereid is om van tyd tot tyd ‘n bulletin te herlei kontak asb. vir Rassie by rassiezs1yt@gmail.com om jou naam op die rooster te plaas. Jy kan self die datums noem waar jy bereid is om ‘n uitsending op 80m of 40m te doen. Wees deel van die span!

Die eienaars van Kenwood TS 2000 radios kan die radio inspan om die herleiwerk outomaties te doen. Vra vir Schalk ZR1SWB hoe om jou Kenwood TS-2000 in te stel.

HERHALER NUUS.

Ons herhalers is in die algemeen in ’n goeie toestand. Die 145.700 MHz herhaler se koppeling met Echolink is suksesvol geïmplementeer en is in daaglikse gebruik. Die naam is ZS0BAK-R, 145.700 Constantia. Daar word tans gewerk om vir ons herhalers ook aan te sluit by AllStarlink en dit te gebruik onder andere as ’n verbinding met ander herhalers in die omgewing en ook verder die wêreld in..

Bitter min BARK lede word tans op die 2 DMR herhalers, wat beskikbaar is in die Wes-Kaap, gehoor. Dit is nogal handige tegnologie en meer lede kan gerus een van die DMR herhalers naaste aan hulle gebruik.

Dankie aan die BARK lede wat gereeld bydra tot die herhalerfonds. Besoek wcrwg.co.za vir al die inligting oor herhalers.

Die bankbesonderhede van die Herhalerwerkgroep is soos volg:
Bank: FNB Rekening Tipe: Tjek
Rekeningnommer: 62338034937
Takkode: 250655 (Elektroniese deposito)
Takkode: 200612 (Teen deposito)

Gebruik asseblief jou roepsein as verwysing. Alle skenkings sal erken word met dank.
WEBWERF / WEBSITE
http://www.bark.org.za

NUWE LEDE EN BELANGSTELLENDES:
Ons is ‘n vriendelike, hulpvaardige en hartlike groep mense in hierdie klub en verwelkom nuwe lede en belangstellendes.

Of jy ‘n groentjie is wat graag die SARL se eksamen wil skryf of ‘n ou hand wat terugkeer na die stokperdjie, voel asseblief vry om enige van die persone hierbo te kontak vir meer inligting oor die klub en ons fantastiese stokperdjie. Kontak Jannie zs1jfk@gmail.com

NEW MEMBERS AND INTERESTED PARTIES:
We are a friendly, helpful, and a genial group of people in this club and welcome new members from the Cape Town area, Boland and further afield and any other interested parties.

Whether you are a person looking to join the hobby and take the SARL Exam or an old hand coming back to the hobby, please feel free to contact Jannie zs1jfk@gmail.com for more information about the club and our fantastic hobby.

BYDRAES TOT CQ BOLAND
Die redaksie van CQ BOLAND verwelkom alle artikels en 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 toepaslikheid inligting en artikels te verseker. E-pos bydraes na zs1ml@bark.org.za asseblief.

CONTRIBUTIONS TO CQ BOLAND
The editor of CQ BOLAND welcome all articles and contributions from Boland's members and friends of the club. Contributions may, however, be edited and posted at the discretion of the editor, thus ensuring the appropriateness of any information and articles. Email contributions to zs1ml@bark.org.za please.

BOLAND AMATEUR RADIO KLUB
RAE KLAS A KURSUS 2025

RAE Klas A Kursus 2025

Kontak: Jannie Kirsten (ZS1JFK): zs1jfk@gmail.com
Indien jy belangstel om die RAE te skryf en jou amateurradiolisensie te bekom, voel gerus vry om by die volgende BARK RAE Klas A kursus aan te sluit. Die kursus vind twee keer per jaar plaas en enigiemand is welkom om aan te sluit. Kontak Jannie om te hoor wanneer die volgende kursus plaasvind.

Aanlyn registrasiestelsel:
Maak asseblief seker dat julle deur middel van die gepasde aanlyn registrasiestelsels vir beide die RAE sowel as die BARK RAE kursus geregistreer het. Die twee registrasies word apart hanteer.

1. Kandidate moet na die volgende adres gaan om vir die **RAE** te registreer: **http://www.sarl.org.za/Web3/RAE/RAERegistration.aspx**
2. Nadat jy vir die RAE self geregistreer het, kan jy gerus die volgende skakel gebruik om vir die **BARK RAE kursus** te registreer: **https://forms.gle/8t4c7prxePvcq63eA**

Koste:
Die koste vir die kursus beloop **R250** en is betaalbaar met registrasie. Die kostes sluit BARK lidmaatskap vir die eerste jaar in. Die bankbesonderhede is as volg:
Bank: Nedbank
Rekeningnommer: 1187147885

Gebruik asseblief "RAE + jou van" as bewys van betaling en stuur dit na zs1jfk@gmail.com

Skedule:
Die kursus duur 13 weke met sessies wat op Dinsdae aande om 19:00 tot 21:00 oor Zoom aangebied word. Die huidige kursus het reeds begin, maar daar is nog geleentheid om in te skakel en op te vang deur middel van die video-opnames van die eerste lesse.

Studiemateriaal:
Die RAE studiemateriaal is beskikbaar om af te laai vanaf die SARL webwerf by die volgende adres: **http://www.sarl.org.za/public/licences/rae.asp**

Enige addisionele hulpbronne vir die kursus sal deur middel van **Google Drive** gedeel word.

Eksamenlokaal:
Dit is elke kandidaat se verantwoordelikheid om seker te maak dat hulle by 'n geregistreerde eksamenlokaal ingedeel is. Vir meer inligting oor beskikbare eksamenlokale, sien gerus die volgende skakel: **http://www.sarl.org.za/Web3/RAE/ExamCentresPublic.aspx**

BARK bied self ‘n eksamenlokaal by die **Stellenbosch Vliegklub** aan: R44, Stellenbosch, 7600 (aanwysings beskikbaar) GPS: -33.97952495667173, 18.8194676430059

HF Assessering:
As deel van die kursus word van jou verwag om te leer hoe om ‘n HF stasie op ‘n veilige manier te bedryf sonder om met ander in te meng. Die praktiese HF Assessering sal plaasvind op ‘n tyd en plek wat nog bepaal sal word. BARK assessors is **net beskikbaar op hierdie aangewysde dag** waar almal gelyk geassesseer sal word en geen alternatiewe assesserings gaan deur BARK gereël word nie.

Indien jy nie die BARK HF Assessering kan bywoon nie, moet jy asseblief self met ‘n geregistreerde HF Assessor reël om dit afgehandel te kry voor of op die dag van die RAE. Vir ‘n lys van geregistreerde HF Assessors, sien gerus die volgende skakel:
http://www.sarl.org.za/Web3/RAE/HFAssessorsPublic.aspx

HULPMIDDELS VIR RAE KANDIDATE: / HELPFUL RESOURCES FOR RAE CANDIDATES:
Sien die BARK webwerf: https://bark.org.za/kursus-rae/

KOMPETISIE ALMANAK / CONTEST CALENDAR
The 2025 SARL Contest Manual V1.1 (Blue Book) is available here
The 2025 Diary of Events is available here

CONTEST PREFERRED SPECTRUM
14.1 Contest activity shall not take place on the 5, 10, 18 and 24 MHz bands.
Non-contesting radio amateurs are recommended to use the contest-free HF bands (60, 30, 17 and 12 m) during the largest international contests.

14.2 The following frequencies is an extract from the IARU Region 1 band plan.
http://www.sarl.org.za/public/licences/bandplan.asp

80M
CW: 3 510 3 560 kHz
SSB: 3 603 - 3 650 kHz and 3 700 3 800 kHz
(3 651 to 3 699.99 is a contest free segment)

40M
CW: 7 000 7 040 kHz
SSB: 7 063 7 100 kHz and 7 130 7 200 kHz
(7 101 to 7 129.99 is a contest free segment)

20M
CW: 14 000 14 060 kHz
SSB: 14 125 14 300 kHz

6M / VHF / UHF Contest Frequencies

50,200 – 50,250 MHz	SSB/CW
50,250 – 50,300 MHz	Digital
50,350 – 50,400 MHz	FM
144,200 – 144,250 MHz	SSB/CW
144,250 – 144,300 MHz	Digital
144,350 – 144,400 MHz	FM
145,500 – 145,575 MHz	FM
432,200 – 432,250 MHz	SSB/CW
432,250 – 432,300 MHz	Digital
432,350 – 432.400 MHz	FM

WCRWG Status Report:

Current and previous reports can be found at **http://wcrwg.co.za/category/status-report/**

General requirements: upgrade and maintenance program

1. Cash donations
2. High quality N-type male and female connectors for ½" heliax
3. VHF and UHF ferrite circulators;
4. N-type F-F Lightning Protection units;

	Station Location	Band	Mode	Tone	TX MHz	RX MHz	Latitude	Longitude	Grid	Status
1	CPUT Bellville	6m	Beacon	-	50.080	-	33°55'55"S	18°38'32"E	JF96HB	UP
2	Cape Town	2m	Beacon	-	144.435	-	33°55'10"S	18°25'24"E	JF96FB	UP
3	Helderberg	2m	APRS	-	144.800	144.800	34°02'25"S	18°51'23"E	JF95KX	UP
4	Du Toitskloof	2m	APRS	-	144.800	144.800	33°45'00"S	19°11'45"E	JF96OG	UP
5	Hanskop	2m	Voice	88.5	145.600	145.000	34°06'08"S	18°57'58"E	JF95LV	UP
6	Piketberg	2m	Voice	88.5	145.625	145.025	32°49'10"S	18°44'18"E	JF97IC	UP
7	Du Toitskloof	2m	Voice	88.5	145.650	145.050	33°40'30"S	19°05'23"E	JF96NH	UP
8	Riversdale	2m	Voice	88.5	145.650	145.050	34°01'10"S	21°07'41"E	KF05NX	UP
9	Jonaskop	2m	Voice	88.5	145.675	145.075	33°58'20"S	19°30'23"E	JF96SA	UP
10	George	2m	Voice	88.5	145.700	145.100	33°55'39"S	22°27'00"E	KF16FB	UP
11	Constantiaberg	2m	Voice	88.5	145.700	145.100	34°03'15"S	18°23'13"E	JF95EW	UP
12	Hermanus	2m	Voice	88.5	145.725	145.125	34°23'51"S	19°09'39"E	JF95NO	UP
13	Tygerberg	2m	Voice	88.5	145.750	145.150	33°49'31"S	18°36'18"E	JF96HE	UP
14	Tygerberg	70cm	Voice	88.5	434.625	433.025	33°49'31"S	18°36'18"E	JF96HE	UP
15	Verkykerskop	70cm	Voice	88.5	434.650	433.050	34°06'08"S	18°57'58"E	JF95LV	UP
16	Helderberg	70cm	DMR	-	438.350	430.750	34°02'25"S	18°51'23"E	JF95KX	UP
17	Signal Hill	70cm	DMR	-	438.400	430.800	33°54'56"S	18°24'41"E	JF96EC	UP

Notes and other info like DTMF codes are published on the WCRWG website. https://wcrwg.co.za/

Send fault reports via e-mail to: **wc-repeater-fault@googlegroups.com**
To receive the weekly report direct via e-mail, subscribe to:
wc-repeater-announcements@googlegroups.com
You can subscribe by sending an e-mail message to
wc-repeater-announcements+subscribe@googlegroups.com

Scheduled repeater usage

Please be aware of the following scheduled use of the specified repeaters and, **except for emergency traffic**, kindly keep them clear for these activities. Times are given in SAST.

USE	USER	AFFECTED REPEATERS		FROM	TO	ON	NOTES
Net	CTARC	145.750	Kanonkop	20.00	21.00	Mondays	CT Net
Bulletin	HWC	145.700	Constantiaberg	19.30	20.30	Wednesdays	Except the first Wednesday of each month
Bulletin	BARK	145.700	Constantiaberg	09.30	10.30	Sundays	
Bulletin	CTARC	145.750	Kanonkop	08.30	09.30	Sundays	SARL bulletin followed by club bulletin

The WCRWG has a new website packed full of information on all the repeaters and detailed reports of activities. You can access this website via the link **http://www.wcrwg.co.za/**

Any notes, updates, incidents or donations are to be sent by e-mail to '**reports@wcrwg.co.za**' to reach that mailbox no later than 16:00 SAST on the Tuesday of publication of the report. Any information received after that will be held over to the following report.

Account Information
Account Name: Western Cape Repeater Working Group (WCRWG)
Bank: FNB
Account type: Cheque
Account number: 62338034937
Branch code: 250655 (Electronic payments) Branch code: 200612 (Counter deposits)

KLUB NUUS:

Algemene Klub nuus:

Dagsê lede,

Die nuwe naambalkies is reeds uitgereik aan die meerderheid van ons lede wat bestel het en dit lyk of almal baie tevrede is met die resultaat.

Daar is egter 'n klein hoeveelheid mense wat nog nie hulle balkies in ontvangs geneem het nie en hulle moet asb. aandui wat ons daarmee moet doen.

Ons kan dit aanstuur na jou teen R130 stuk met Courier Guy, of jy kan dit by my (Marius ZS1ML) huis kom haal in Kenridge, Durbanville, of by ons volgende vergadering kry.

Indien jy nog nie jou eie balkie bestel het nie, is nou die tyd. Dit kos R180 stuk en ons probeer ten minste 10 eenhede bymekaar maak om 'n bestelling te plaas. As jy nou bestel en ons genoeg deelname het mag jy dit op die volgende vergardering kry of voor dit as jy wil kom optel of laat koerier.

Betaling moet gemaak word aan die klub rekening met jou Roepsein en "naambalkie" as verwysing asb. Stuur ook asseblief bewys van betaling aan die e-posse: finansies@bark.org.za en voorsitter@bark.org.za waar moontlik.

Ons bankrekening besonderhede is op Facebook beskikbaar en dit is natuurlik ook op ons webtuiste waar jy dit kan kry onder: "Kontak Ons" https://bark.org.za/contact/

Bankrekening: Nedbank.
Rekeningnommer: 1187147885 (cheque account)
Tak kode: 198765
Bank Naam: NEDBANK LIMITED
Bank Tak: NEDBANK SOUTH Africa

Volgende klubvergadering
Die volgende klubbyeenkoms is geskeduleer vir vroeg Maart en ons sal binnekort bevestig. Ons is besig met reëlings vir 'n klompie tegniese werkswinkels, die eerste waarvan sal wees, 'n antenna bou vir nuwe en ouer lede. Die datums sal aangekondig word sodra ons genoeg belangstelling gekry het van lede. Kontak asb. dringend vir Jannie ZS1JFK rae@bark.org.za .

Verjaarsdae en ander nuus word aangekondig elke Sondae op ons vele klub nuus bulletins; gaan luister daarna, dis sal jou gelukkig laat voel!

Short Tip / Kortliks Wysheid

When dealing with antennas, if the frequency is too low, it means the antenna is too long for the desired frequency. Therefore, you should shorten the wire.

Here's a general guideline:

- **To increase the frequency, you shorten the wire.**
- **To decrease the frequency, you lengthen the wire.**

Wanneer jy met antennas werk, indien jy die frekwensie wil verhoog, moet jy die draad verkort.

Hier is 'n algemene riglyn:

- **Om die frekwensie te verhoog, verkort jy die draad.**
- **Om die frekwensie te verlaag, verleng jy die draad.**

What Is Amateur Radio And What Does The Hobby Comprise?

ZS1ML

Amateur radio, often referred to as "ham radio," is a hobby that involves the use of designated radio frequencies for non-commercial communication, experimentation, and technical education. It offers a broad scope of activities, attracting enthusiasts with diverse interests and technical skills.

Scope of Amateur Radio:

1. **Communication**: Amateur radio operators, or "hams," communicate with others locally, nationally, and even globally. They use various radio frequencies to connect, often without relying on the internet or cell networks. Contacts can be made via voice, Morse code (CW), digital modes, and even satellites or moon-bouncing (Earth-Moon-Earth, EME) transmissions.
2. **Technical Experimentation**: The hobby encourages experimentation with electronics and radio technology. Hams build and modify equipment like antennas, transmitters, and receivers, or develop new communication modes and protocols. The flexibility of amateur radio makes it a testing ground for innovations in wireless technology.
3. **Emergency Communications**: Amateur radio plays a crucial role in providing emergency communication when conventional networks fail. Hams are often trained in disaster response and coordinate with public safety officials to ensure communication is maintained during crises such as natural disasters.
4. **Contests and Awards**: Hams participate in contests, where they try to make as many contacts as possible within a specified time frame. There are also awards for achievements such as contacting stations in every country (DXCC) or every state (WAS).
5. **Satellite Communication**: Amateur radio operators can communicate via low-Earth-orbiting satellites (called "amateur satellites" or "AMSAT"), making it possible to connect over long distances using small handheld radios.
6. **Public Service**: Hams often volunteer for public service communications, assisting with events like marathons or parades, providing logistical communication for organizers, or supporting local emergency management.
7. **Digital Modes**: With the advancement of technology, amateur radio has adopted digital communication methods such as FT8, PSK31, and DMR. These modes allow efficient, long-distance communication even under poor conditions and often use computers to transmit and receive signals.
8. **Radio Astronomy**: Some hams engage in radio astronomy by building receivers to detect signals from space, providing insights into celestial phenomena.

Details and Requirements:

- **Licensing**: To operate on amateur frequencies, individuals must obtain a license from their country's regulatory body (e.g., FCC in the U.S., SARL in South Africa). Licensing ensures operators understand the technical aspects of radio and the rules governing its use.
- **Frequency Bands**: Amateur radio is allocated specific frequency ranges, from low-frequency (LF) bands to very high-frequency (VHF) and ultra-high-frequency (UHF) bands. Each band has unique characteristics affecting signal propagation, distance, and atmospheric interaction.

- **Equipment**: Operators use various equipment, from simple handheld radios (HTs) to complex high-power transceivers with external antennas. Many hams build their equipment, while others purchase commercial gear.
- **Community**: Amateur radio has a strong sense of community. Local clubs, such as the Boland Amateur Radio Club, provide support, education, and social opportunities for hams. Operators can also communicate with one another through global organizations like the International Amateur Radio Union (IARU).

In essence, amateur radio combines communication, technical experimentation, and community service, making it a rich and diverse hobby with numerous facets for people of all technical abilities and interests.

Wat Is Amateurradio En Wat Behels Die Stokperdjie?

ZS1ML

Amateurradio, dikwels bekend as "amateur radio," is 'n stokperdjie wat die gebruik van gespesifiseerde radiofrekwensies vir nie-kommersiële kommunikasie, eksperimentering, en tegniese opleiding behels. Dit bied 'n wye omvang van aktiwiteite en trek entoesiaste aan met uiteenlopende belange en tegniese vaardighede.

Omvang van Amateurradio:

1. **Kommunikasie**: Amateurradio-operateurs, of "hams," kommunikeer met ander plaaslik, nasionaal, en selfs wêreldwyd. Hulle gebruik verskeie radiofrekwensies om kontak te maak, dikwels sonder om op die internet of selfoonnetwerke te staat te maak. Kontakte kan gemaak word via stem, Morse-kode (CW), digitale modusse, en selfs satelliete of maan-weerkaatsings (Earth-Moon-Earth, EME) uitsendings.
2. **Tegniese Eksperimentering**: Die stokperdjie moedig eksperimente met elektronika en radiotegnologie aan. Hams bou en verander toerusting soos antennas, senders, en ontvangers, of ontwikkel nuwe kommunikasie-modusse en protokolle. Die buigsaamheid van amateurradio maak dit 'n toetsgrond vir innovasies in draadlose tegnologie.
3. **Noodkommunikasie**: Amateurradio speel 'n belangrike rol in die voorsiening van noodkommunikasie wanneer konvensionele netwerke misluk. Hams is dikwels opgelei in rampreaksie en koördineer met openbare veiligheidsbeamptes om te verseker dat kommunikasie behou word tydens krisisse soos natuurrampe.
4. **Kompetisies en Toekennings**: Hams neem deel aan kompetisies waar hulle probeer om soveel kontakte as moontlik te maak binne 'n gespesifiseerde tydperk. Daar is ook toekennings vir prestasies soos om kontakte in elke land (DXCC) of elke staat (WAS) te maak.
5. **Satellietkommunikasie**: Amateurradio-operateurs kan kommunikeer via lae-Aarde-bane satelliete (genoem "amateursatelliete" of "AMSAT"), wat dit moontlik maak om oor lang afstande te kommunikeer met klein draagbare radios.
6. **Openbare Diens**: Amateurs dien as vrywilligers, dikwels vir openbare diens-kommunikasie deur bystand te verleen by geleenthede soos marathons of parades, logistiese kommunikasie vir organiseerders te verskaf, of plaaslike noodbestuur te ondersteun.

7. **Digitale Modusse**: Met die vooruitgang van tegnologie het amateurradio digitale kommunikasie-metodes aangeneem soos FT8, PSK31, en DMR. Hierdie modusse maak doeltreffende, langafstandkommunikasie moontlik, selfs onder swak toestande, en gebruik dikwels rekenaars om seine te stuur en te ontvang.
8. **Radiosterrekunde**: Sommige hams raak betrokke by radiosterrekunde deur ontvangers te bou om seine uit die ruimte op te tel, wat insig bied in hemelse verskynsels.

Besonderhede en Vereistes:

- **Lisensiëring**: Om op amateurradio-frekwensies te werk, moet individue 'n lisensie van hul land se regulatoriese liggaam kry (bv. FCC in die VSA, SARL in Suid-Afrika). Lisensiëring verseker dat operateurs die tegniese aspekte van radio en die reëls wat die gebruik daarvan reguleer, verstaan.
- **Frekwensie-bande**: Amateurradio word spesifieke frekwensiebande toegeken, van lae-frekwensie (LF) bande tot baie hoë-frekwensie (VHF) en ultra-hoë-frekwensie (UHF) bande. Elke band het unieke eienskappe wat seinpropagasie, afstand en atmosferiese interaksie beïnvloed.
- **Toerusting**: Operateurs gebruik verskeie toerusting, van eenvoudige draagbare radios (HT's) tot komplekse hoëkrag-senders met eksterne antennas. Baie hams bou hul toerusting, terwyl ander kommersiële toerusting koop.
- **Gemeenskap**: Amateurradio het 'n sterk gemeenskapsgevoel. Plaaslike klubs, soos die Boland Amateurradioklub, bied ondersteuning, opleiding, en sosiale geleenthede vir hams. Operateurs kan ook met mekaar kommunikeer deur wêreldwye organisasies soos die Internasionale Amateur Radio Unie (IARU).

In wese kombineer amateurradio kommunikasie, tegniese eksperimentering en gemeenskapsdiens, wat dit 'n ryk en diverse stokperdjie maak met talle aspekte vir mense van alle tegniese vermoëns en belange.

Waarmee hou ’n radioamateur hom besig ná aftrede?

Henry Chamberlain, ZS1AAZ

Lewenslid van die SARL en Boland Amateur Radio Klub.

Die vraag hierbo is natuurlik maklik om te antwoord, met amateurradio natuurlik! Maar dit kan mens ook nie elke dag besig hou nie.

Ek en my vrou het onlangs na ’n TV program gekyk waar ’n onderhoud gevoer is met ’n neuroloog, ’n spesialis op die gebied van die menslike brein. Hy het veral gepraat oor die belangrikheid van oefening vir die brein. Hy het gesê dat beweging belangrik is, dit is nou liggaamlike beweging. Hy het nie veel daaroor gesê nie, maar wel heelwat te sê gehad oor die proses om te leer. Hy het voorgestel dat ’n persoon wat aftree iets leer, ’n nuwe taal of iets waarin hy of sy belangstel. Ek het geweet dat ons amateurs daar ’n voorsprong het.

Ek het al tevore gehoor dat die mens se brein oefening moet kry net soos ons spiere ook oefening moet kry om ons fiks te hou. Ek het ook al gehoor van mense wat aftree en dan besluit hule gaan niks meer doen nie, net op die stoep sit en koffie drink!

Ek dink nie ek het veel van hierdie soort goed geweet toe ek in 1993 afgetree het nie, na drie jaar by die SAUK en sewe-en-dertig jaar by die WNNR. Ek was net omtrent twee weke tuis na aftrede en het begin gewoond raak aan nie vroeg opstaan om te gaan werk nie, toe die telefoon lui en iemand van ’n organisasie wat vir die SA Vloot navorsing doen, my bel en vra of ek nie vir hulle wil kom werk nie. Ek wou eers protesteer en het gesê ek wil darem voel hoe dit is om nie te moet werk nie, maar toe hy sê ek kan my eie voorwaardes stel, kon ek dit nie weerstaan nie. Toe gaan werk ek by hulle vir ’n jaar en ’n half. Dit was interessant en leersaam.

Ons het op Stellenbosch gewoon, tussen al die geleerde mense en studente, en ek was goed ingerig as radioamateur met antennas vir HF en satellietwerking en digitale modusse op 2M en HF. Dit was in die dae van die Spectrum rekenaartjie wat ek ook aangeskaf het, my eerste stappe in rekenaarkennis.

En toe besluit iemand by die universiteit om ’n satelliet te bou sodat meestersgraadstudente dit kon gebruik om hulle kennis van ruimtewetenskappe te verbeter. Hulle moes natuurlik toestemming kry om sekere frekwensies te gebruik, en besluit toe om amateur frekwensies te gebruik omdat die bande reeds daar was. Ek was toe seker die aktiefste amateur op die dorp met kennis van digitale kommunikasie en binne loopafstand van my af woon Prof Garth Milne, die projekleier van die satelliet projek, ook ’n amateur.

In dieselfde tyd het die Universiteit ook ’n wetenskap klub gestig waar kinders met elektronika kon eksperimenteer en hulle het my gevra om dit te kom bestuur. Die idee was om meer belangstelling in ingenieurswese te genereer. Ons het ’n goed-ingerigte lokaal gehad met plek vir tot sewe-en-twintig kinders en daar was soldeerboute en gereedskap en ’n kragbron by elke sitplek. Dit het my besig gehou vir twee middae per week. Die wetenskapklub het uiteindelik ook onderwysers ingesluit wat kom klas bywoon om hulle tegnologie kennis op te knap en alhoewel ek nie meer betrokke is daarby nie word ek nog so elke nou en dan geraadpleeg as daar ’n probleem is.

Daar was ’n paar kinders wat besonder slim was en een van hulle het al ’n doktorsgraad by Stanford in die VSA verwerf en ons hou nog kontak.

Dit was net ’n paar treë na die deel van die gebou waar die Sunsat satelliet aan die bou was, en ek kon dikwels daar inloop en met die studente gesels en is as personeellid behandel.

Ons amateurs het mos herhalers op verskillende hoë plekke oor die land. So het ek agtergekom dat daar ook kommersiële herhalers is, en daar is ook papegaaiherhalers, eenvoudige herhalers wat klein en kompak gebou kon word. Daar was een op Groenlandberg wat deur boere gebruik was, en die universiteit se sekuriteitsafdeling het ook so ’n herhaler gebruik.

Toe vra Garth Milne my eendag, "Wat sou jy in die satelliet wil sien?" Toe stel ek voor ’n papegaaiherhaler, omdat ek geweet het ’n gewone herhaler is te groot om in die satelliet in te pas. Toe kry een van die studente die opdrag om dit te ontwerp en dis in die satelliet ingesluit en was baie gewild veral by skole in die VSA wat deur die satelliet kon kommunikeer met slegs 2M handstelletjies.

Ook in dié tyd was daar ’n span navorsers op Gough Eiland en een van hulle was Chuck Brady, N4BQW, ’n Amerikaanse ruimtevaarder en entoesiastiese radioamateur en toe kry ek die geleentheid om met hom op 2M deur die papegaaiherhaler kontak te maak. Dave Reece, ZS1DFR het ook met hom kontak gehad.

Sunsat se batterye was nie baie groot nie en daarom is die senders net met sekere tye aangeskakel. Toe word ek gevra om die skedule uit te werk, dit was ’n daaglikse taak en dit het interessant geword want ek het begin e-posse kry van amateurs oor die wêreld wat gevra het ek moet hulle kans gee om deur die satelliet te kommunikeer.

In ongeveer 1999 is ek gevra om die sendingkantoor van die NG Kerk in die Weskaap se raadgewer te word om hulle te help om sendelinge op afgeleë plekke van raad te bedien oor radiokommunikasie. Daar was sendelinge veral in Mosambiek en Malawi maar later was daar ook een in Lesotho. Die beste raad was toe dat hulle HF radio moet gebruik, en ons het op Kenwood TRC80s besluit. Maar ek het toe reeds heelwat ondervinding gehad met digitale kommunikasie en die sendelinge het toe elkeen ’n PK232 datamodem saamgekry sodat hulle kon e-posse per radio stuur en ontvang. Later is die PK232s vervang met vinniger SCS modems wat Pactor kon doen.

Die sendelinge het ook frekwensietoekennings binne Mosambiek gekry op kommersiële kanale, maar om oor internasionale grense te kommunikeer moes hulle as radioamateurs kwalifiseer en uiteindelik was daar vyf-en-dertig nuwe roepseine in Mosambiek en die amateurbevolking in Mosambiek het met ongeveer sestig persent gestyg.

Links: Henry Chamberlain

By my huis in Stellenbosch het ek my radio en rekenaar ingerig as ’n HF bulletinbordstelsel wat die sendelinge se boodskappe kon ontvang en aanstuur. Na ’n tyd het ’n amateur in die VSA my gehelp om die stelsel te outomatiseer. Hy was bekend met die persoon wat die sagteware vir die Winlink stelsel geskryf het, en dié persoon het goedgunstiglik dieselfde sagteware aan my gestuur sodat die stelsel outomaties kon werk. Daar was uiteindelik tien sendingstasies, meestal in Mosambiek maar ook een in Malawi en een in Lesotho, met gewoonlik so vier gesinne op elke sendingstasie, en hulle het met piektye tot eenhonderd-en-twintig boodskappe per dag deur my stelsel gestuur, en dit het ek volgehou vir sewe jaar tot 2006 toe ek na ’n aftreeoord verhuis het. Sover ek weet is selfone deesdae meer in gebruik in daardie deel van die wêreld sodat HF kommunikasie nie meer veel gebruik word nie.

Volgende keer wanneer ek verjaar sal ek neëntig jaar oud wees. My gesondheid is nog goed behalwe vir ’n rugprobleem, en ek is dankbaar dat my kop nog goed werk. Ek stel nog belang in tegnologie wat teen ’n snelle pas voortgaan, en ek eksperimenteer veral met magnetiese lus-antennas in die hoop dat ek ander afgetrede amateurs van raad kan bedien oor kompakte antennas in aftreeoorde.

Nuusbrokkies van elders in die Wêreld!

“Ham Radio Gizmos” Platform Bekendstelling Dokumentêre Reeks om amateur radio - entoesiaste op te voed en te Inspireer

Orlando, FL HamCation – Ham Radio Gizmos het trots die bekendstelling van sy baanbrekende dokumentêre platform aangekondig, ontwerp om die ham-radio gemeenskap op te voed en te inspireer. Hierdie innoverende reeks meng ryk historiese verhale met moderne tegnologiese insigte, wat kykers 'n diepgaande blik bied op die evolusie van die ham-radio stokperdjie.

Gelei deur bedryfsveteraan Lee Love (roepsein N2LEE), wie se diverse agtergrond dekades in bemarking en uitgebreide televisieproduksie insluit, sowel as 15 jaar as 'n kommersiële advertensiefotograaf en regisseur in die Washington, DC-gebied, is Ham Radio Gizmos gereed om te transformeer hoe entoesiaste met ham-radio geskiedenis en innovasie omgaan.

“Ons dokumentêre reeks is 'n reis deur tyd, wat die onvertelde verhale van ham-radio se verlede ten toon stel terwyl dit die deurbraak wat steeds sy toekoms vorm, beklemtoon,” het Lee Love, Stigter & Hoof Storieverteller by Ham Radio Gizmos, gesê. “Deur historiese insigte met vandag se voorpunttegnologie te verbind, beoog ons om beide nuwe en ervare hams met kennis en inspirasie te bemagtig.”

Belangrike Hoogtepunte van die Dokumentêre Reeks:

- **Historiese Verkenning:** Dui in op min bekende verhale wat die oorsprong en evolusie van ham-radio onthul.
- **Moderne Innovasie:** Verstaan hoe vroeë deurbraak die weg gebaan het vir vandag se tegnologiese vooruitgang.
- **Kundige Storievertelling:** Profiteer van Lee Love se ongeëwenaarde kundigheid, wat dekades van bedryfservaring met 'n passie vir ham-radio meng.
- **Boeiende Multimedia-inhoud:** Beleef dokumentêre verryk met argiefmateriaal, kundige onderhoude, en diepgaande ontleding.

Ham Radio Gizmos is toegewy aan die verskaffing van 'n omvattende bron wat nie net opvoed nie, maar ook die nalatenskap en toekoms van ham-radio vier. Deur hierdie dokumentêre reeks beloof die platform om 'n onontbeerlike gids te wees vir entoesiaste wat gretig is om die tegniese en historiese dimensies van die stokperdjie te verken.

Oor Ham Radio Gizmos
Ham Radio Gizmos is 'n innoverende digitale platform wat daartoe verbind is om die ryk nalatenskap en ontwikkelende toekoms van ham-radio te verken. Deur boeiende dokumentêre en kundige inhoud, poog die platform om die ham-radio gemeenskap op te voed, te inspireer en te bemagtig deur historiese mylpale met moderne tegnologiese vooruitgang te verbind.

Media Kontak
Lee Love
Stigter & Hoof Storieverteller
Ham Radio Gizmos
E-pos: press@HamRadioGizmos.com
YouTube: Youtube.com/@HamRadioGizmos
Webwerf: www.hamradiogizmos.com

Laai spoele is verliesig. Waar of onwaar?

Deur **John VA3KOT** op 1 Januarie 2025
Vertaal in Afrikaans Marius ZS1ML en MS-Word funksie.

Almal weet Dit is hoe dit gaan Almal weet

Almal weet dat laaispoele verlieserig is, so dit moet waar wees, nè? Dit is nie nodig om te bevraagteken wat "almal weet" nie - *tensy jy buite die boks dink*. Wel, dit is die primêre missie van hierdie blog, so kom ons kyk na die voorstel dat "laaispoele verlies meebrings" en gebruik kritiese denke, so vind uit of "almal" reg is of ...

Hoe om laaispoelverlies te meet?

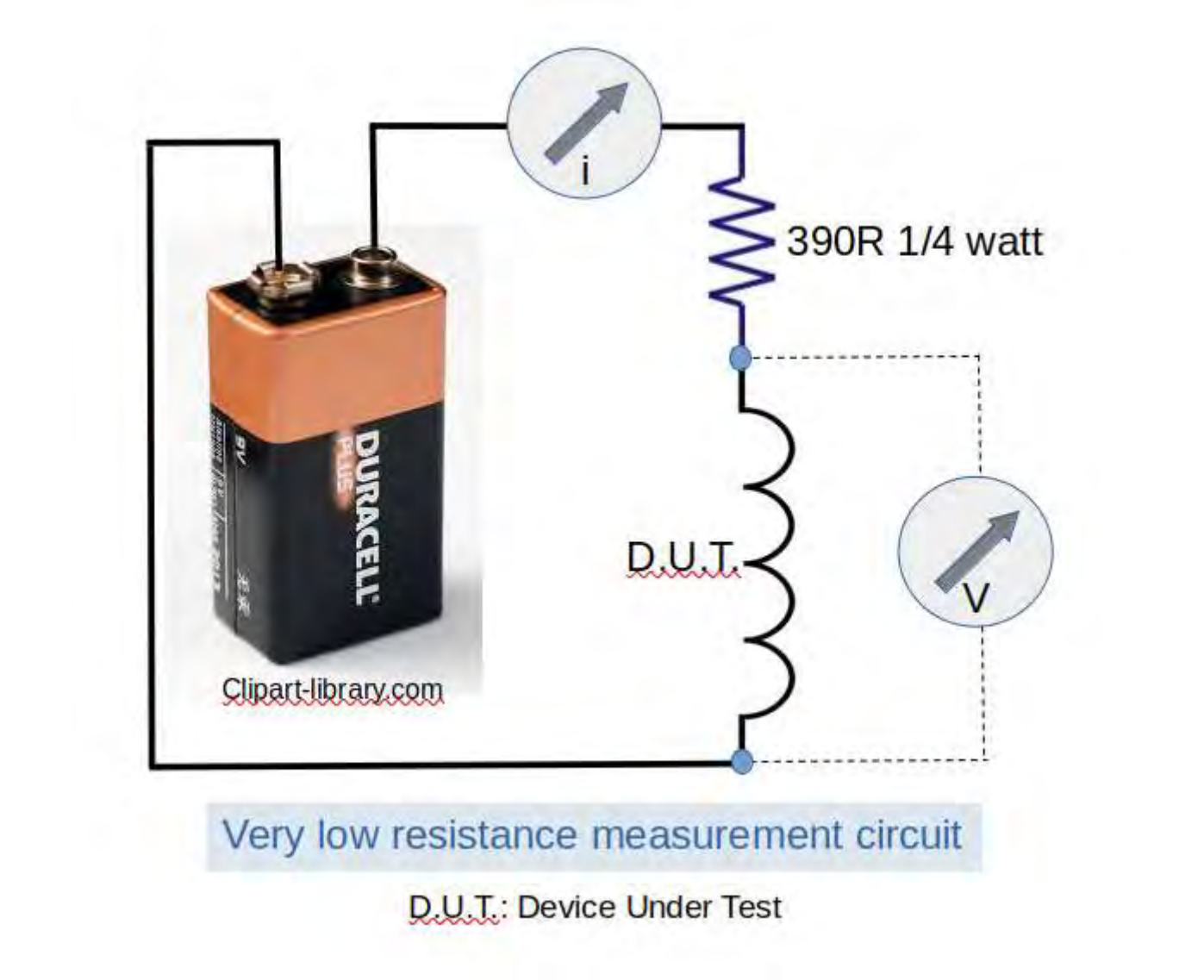
Eerstens. Ons moet 'n manier vind om die krag wat in 'n antenna-laaispoel verlore gaan, te meet. Almal weet (en *Ham Radio Outside the Box* stem saam) dat enige element van 'n antennastelsel geneig is om wat ons noem "ohmiese verliese" te veroorsaak. Dit sluit in die materiaal waaruit 'n antenna gemaak word, die verbindings tussen die antenna en sy toevoerlyn, die toevoerlyn self, impedansietransformators, lokvalle en laaispoele.

Ohmiese verliese kan gemeet word met behulp van die eenvoudige formule i ^ 2 * R (die kwadraat van die stroom deur die element vermenigvuldig met sy weerstand. Kan ons weerstand in plaas van impedansie in 'n RF-stelsel gebruik? Kom ons neem aan dat die "RF-stelsel" hier 'n resonante antenna is. Ons weet dat impedansie (Z) die vierkantswortel is van die som van die vierkante van 'n antenna se weerstand (R) en sy reaktansie (X). Wanneer 'n antenna resonant is, is sy reaktansie X nul (in 'n perfekte geval) en dus Z=R.

Uno Problemo!

Goed, so kom ons neem net ons laaispoel en meet sy weerstand met 'n ohmmeter. Klink eenvoudig en as jy die regte instrument het, kan dit inderdaad eenvoudig wees. Die *Ham Radio Outside the Box-werkbank* het egter nie so 'n instrument nie. Ons Klein Tools MM325 digitale multimeter het 'n minimum weerstandsmeetreeks van 2 kilo-ohms. As ek probeer om die weerstand van 'n laaispoel met die 2K-instelling te meet, is die resultaat 0,00 ohm. Nie veel nut nie! Miskien is daar 'n ander manier om hierdie kat te vel (ek is eintlik mal oor sommige katte).

Ons kan weer buite die kassie dink en die probleem op 'n ander manier aanpak. As ons 'n stroom deur die spoel laat en dan die spanningsval oor die spoel meet, kan ons die weerstand daarvan vind deur 'n eenvoudige toepassing van Ohm se wet. Gelukkig het dieselfde Klein Tools MM325 DMM baie beter stroom- en spanningsreekse. Dit kan spanning meet tot in die 200 millivolt-reeks en stroom tot by die 200 mikroampère-reeks. Die volgende eenvoudige stroombaan is gebou om die metings uit te voer.



Aangesien ons met baie klein waardes te doen het, is dit belangrik om alles met presisie te meet. Die battery het 'n oop stroombaanspanning van 9.49 volt wat onder las tot 9.13 volt gedaal het. Die weerstand van 390 ohm het 'n gemete waarde van 386 ohm gehad. Ons kan dan die maksimum stroom in die stroombaan bereken as 23.6 milliampère as die spoel geen weerstand het nie. Die weerstand sal 215 mW moet absorbeer, so 'n standaard rommel-kissie-kwartwattkomponent is goed. Die werklike stroom wat gemeet is, was 22,3 milliampère, so dit is duidelik dat die spoel eindige weerstand het.

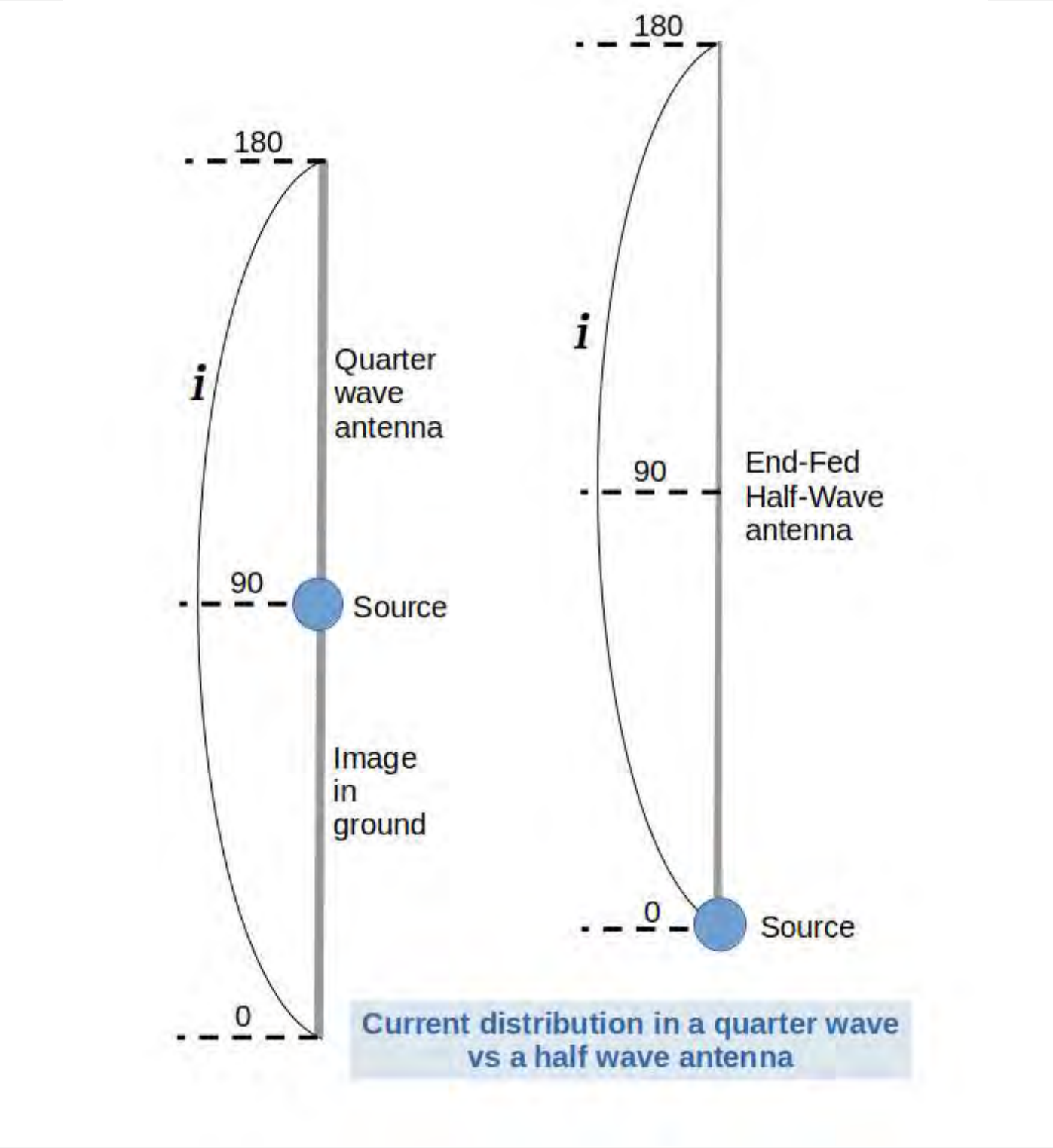
Daarna is die spanningsval oor die spoel gemeet met behulp van die DMM se 200mV-reeks. Dit het net 3 millivolt gemeet. So nou het ons al die data wat nodig is om die weerstand van die spoel te vind. Met behulp van Ohm se wet (R=V/I) was die gemete weerstand 0,13 ohm.

Die laaispoel wat tot dusver gemeet is, is 'n 6.6 mikrohenry-spoel gewikkel met 20 awg geïsoleerde soliede koperdraad op 'n kort lengte van 'n halwe duim (12.7mm), Tipe 40 PVC-loodgieterspyp. Dit is die laaispoel wat gebruik word met die Coil Loaded End-Fed Half-Wave (CLEFHW) wat in die laaste paar plasings bespreek is.

Ek het ook 'n amateur-gemaakte "Wolf River Coil" -styl van laaispoel gemeet wat ek gebruik het met vertikale antennas op die grond. Dit is met vlekvrye staaldraad op 'n 2-duim-deursnee

lugkern-PVC-pyp gewikkel. Dit is 'n aansienlik groter spoel en sy gemete weerstand was 'n verbysterende 5 ohm!

Ons sal hierdie twee spoele binne 'n minuut in 'n vergelykingsoefening gebruik. Maar kom ons kyk eers hoe laaispoele gebruik kan word in (1) 'n grondgemonteerde spoelbelaaide kwartgolfvertikale en (2) die *Ham Radio Outside the Box* Coil-Loaded End-Fed Half-Wave (CLEFHW) vertikale antenna.



In die diagram hierbo kan ons aan die linkerkant 'n klassieke kwartgolf vertikale antenna sien. As dit op die grond gemonteer is, sal dit 'n identiese beeld in die grond hê en baie energie sal vermors word om erdwurms te kook. Gewoonlik word 'n stel radiale gebruik om grond verliese te

verminder. As die antenna lengte minder as 'n kwartgolf is, kan 'n laaispoel gebruik word om die antenna elektries te verleng.

Waar om die laaispoel te plaas?

'n Kwartgolf vertikale antenna sal gewoonlik 'n laaispoel aan sy basis of in sy middel insluit. Teoreties kan die spoel aan die bokant van die antenna geplaas word, maar daar is 'n probleem wat jou gaan uitvang. Hoe hoër die antenna waarop die spoel geplaas word, hoe groter is die induktansie wat benodig word. Groter induktansie beteken 'n groter spoel met verhoogde ohmiese verliese. Let ook op die huidige verspreiding op 'n kwartgolf-sweep op 'n antenna-ontleder. Die huidige maksimum is aan die basis van die sweep wat (as wat "almal" weet korrek is) die grootste verlies tot gevolg sal hê.

Waarom die *amateur radio buite die boks* CLEFHW beter vaar

Vergelyk nou die End-Fed Half-Wave-antenna aan die regterkant van die diagram met die kwartgolf wat reeds bespreek is. Die huidige verspreidingspatroon is dieselfde, behalwe dat ons in plaas van 'n kwartgolf beeld in die grond nou 'n fisiese halfgolf bo die grond het. Een belangrike waarskuwing moet hier erken word. Die CLEFHW is 'n elektries verlengde kort sweep wat staatmaak op 'n basislaaispoel om te werk. Die toevoerpunt (of bron) is aan die onderkant van die antenna waar daar 'n stroomminimum is, dus moet die ohmiese verliese minimaal wees. Ons CLEFHW-laaispoel is baie klein met baie min weerstand, so gekombineer met sy posisie op die huidige minimum, behoort dit doeltreffender te wees as 'n groter spoel teen die huidige maksimum van 'n kwartgolfantenna.

Die les wat geleer moet word uit elektrisiteit transmissielyne.

Kragmaatskappye dra hul opgewekte elektrisiteit teen baie hoë spannings. Hoekom? As die spanning baie hoog is, is die stroom baie laag en i ^ 2xR verliese is dienooreenkomstig laag. As dit nie gedoen word nie, sal 'n gedeelte van die krag in die transmissielyne as hitte verlore gaan.

Nou kan ons tot die kern van die uitdaging kom. Ons kon die weerstand van ons laaispoele meet, nou is dit tyd om die werklike verliese wat in elke geval aangegaan is, te bereken. Ons gaan aanvaar dat ons operasie QRP is met 'n krag van 5 watt. *Ham Radio Outside the Box* erken dat hamme in sommige baie seldsame gevalle eintlik hoër krag gebruik - nee, dit is regtig waar!

Eerstens, die kort sweep op 'n antenna-ontleder met 'n groot, vet laaispoel aan die basis. Die toevoerpunt impedansie hang af van die nabyheid van die grond en ander faktore, so kom ons neem aan dat dit 'n lekker nominale 50 ohm is. Deur die formule V = (P * R) ^ 0.5 te gebruik, kan ons die spanning by die toevoerpunt bereken as 15.8 volt. Van daar af kan ons aflei dat die stroom 316 mA (i=P/V) is.

Sjoe... Soveel krag gaan verlore?

Ons moet nou nog 'n aanname maak - die hele lengte van die laaispoel word gebruik. Natuurlik, as die spoel 'n deel van die pad oor sy lengte getap word, sal die getalle anders wees. My spoel het 'n

weerstand van 5 ohm (hyg), sodat die krag verloor het, met behulp van P=i^2*R = 500 mW. Wow en dubbel wow, dit is 'n enorme – wag ’n bietjie - onbeduidende 10% van ons oorgedra krag.

So hoeveel krag gaan verlore in die CLEFHW se spoel?

Kom ons voer dieselfde wiskunde vir die CLEFHW uit. Die spanning by die toevoerpunt is 112 volt en die stroom is 44.6mA. Die berekende ohmiese verlies gebaseer op 'n spoelweerstand van 0,13 ohm werk uit as 5,8 milliwatt. Dit is ongeveer 100 keer minder as die basisbelaaide kwartgolf-sweep. Wel, tik my om met ’n veertjie.

Alternatiewe?

Ek is baie bewus van ander maniere om die elektriese lengte van 'n antenna te verander. Ons het reeds kortliks in 'n onlangse plasing oor "top hats" (kapasitansie hoede) gehandel. Daar is ook lineêre laai - 'n konsep waarmee ek tans rondspeel en in 'n toekomstige pos sal bespreek.

Hierdie pos handel spesifiek oor die mees algemene metode deur induktiewe vragte te gebruik. Is hulle verliesig? Wel, ja; Maar is hulle voldoende verlies om kommerwekkend te wees? Miskien nie. Jy vorm jou eie mening.

Foute, weglatings en stomme onnoselheid uitgesonderd

Moet asseblief nie my ontleding as feit aanvaar nie. Ek verwelkom enige konstruktiewe kritiek op hierdie pos. Laat weet my asseblief jou gedagtes in die kommentaar.

Loading Coils are Lossy. True or False?

 By **John VA3KOT** on January 1, 2025

Everybody knows That's how it goes Everybody knows

Everybody knows loading coils are lossy so it must be true eh? No need to question what "everybody knows" - *unless you think outside the box*. Well, that's the primary mission of this blog so let's take a look at the proposition that "loading coils are lossy" and use some critical thinking so find out if "everybody" is right or ...

How to measure loading coil loss?

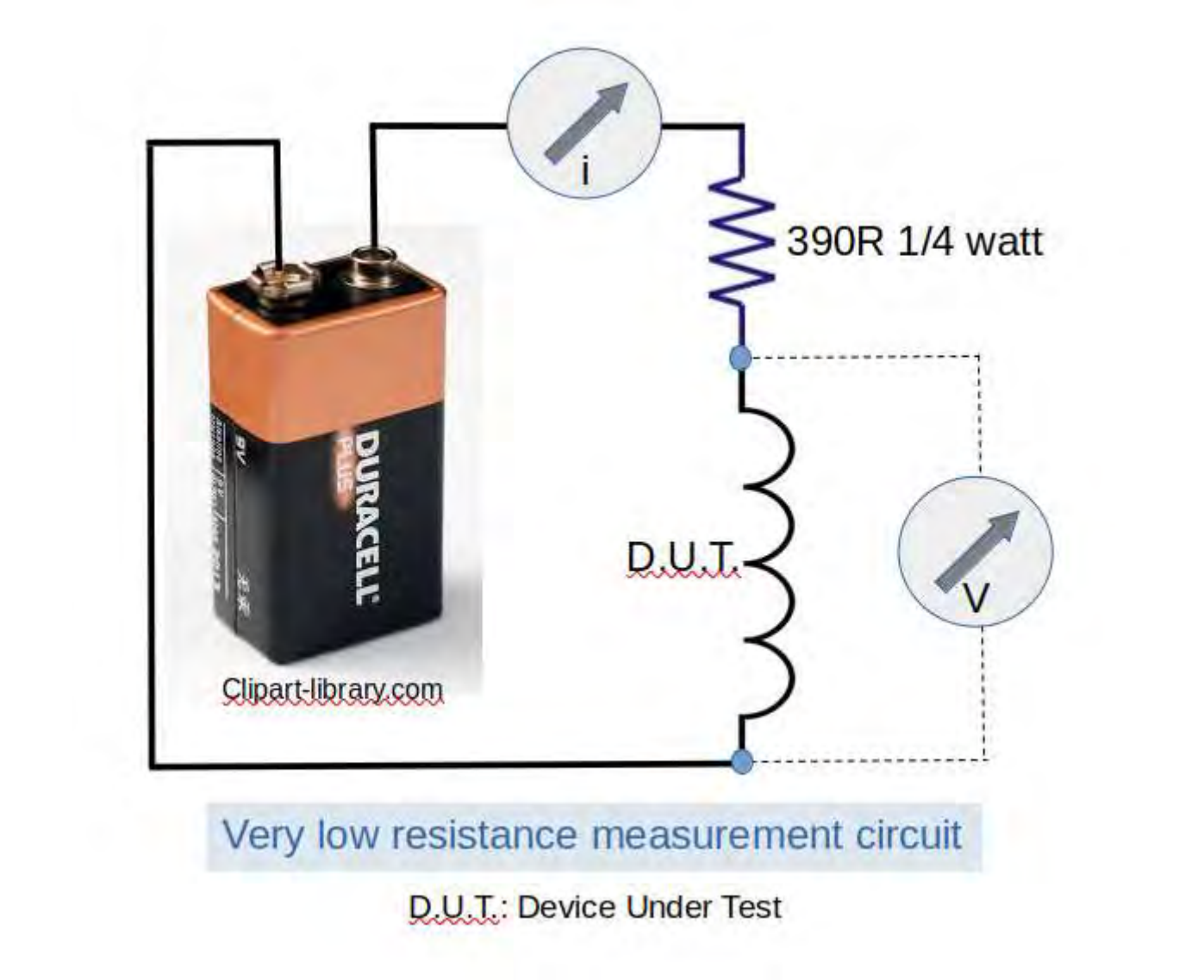
First of all. we need to find a way to measure the power lost in an antenna loading coil. Everybody knows (and *Ham Radio Outside the Box* agrees) that any element of an antenna system is liable to introduce what we call "ohmic losses". This includes the material from which an antenna is made, the connections between the antenna and its feedline, the feedline itself, impedance transformers, traps and loading coils.

Ohmic losses can be measured using the simple formula i^2*R (the square of the current through the element multiplied by its resistance. Can we use resistance instead of impedance in an RF system? Let us make the assumption that the "RF system" here is a resonant antenna. We know that impedance (Z) is the square root of the sum of the squares of an antenna's resistance (R) and its reactance (X). When an antenna is resonant its reactance X is zero (in a perfect case) and therefore Z=R.

Uno Problemo!

Okay, so let's just take our loading coil and measure its resistance with an ohmmeter. Sounds simple and, if you have the right instrument, it may indeed be simple. However, the *Ham Radio Outside the Box* workbench does not have such an instrument. Our Klein Tools MM325 digital multimeter has a minimum resistance measuring range of 2 kilohms. If I try to measure the resistance of a loading coil with the 2K setting the result is 0.00 ohms. Not much use! Maybe there is another way to skin this cat (I actually love some cats).

We can think outside the box again and tackle the problem another way. If we pass a current through the coil and then measure the voltage drop across the coil we can find its resistance by a simple application of Ohm's Law. Fortunately the same Klein Tools MM325 DMM has much better current and voltage ranges. It can measure voltage down to the 200 millivolt range and current down to the 200 microamp range. The following simple circuit was constructed to conduct those measurements.



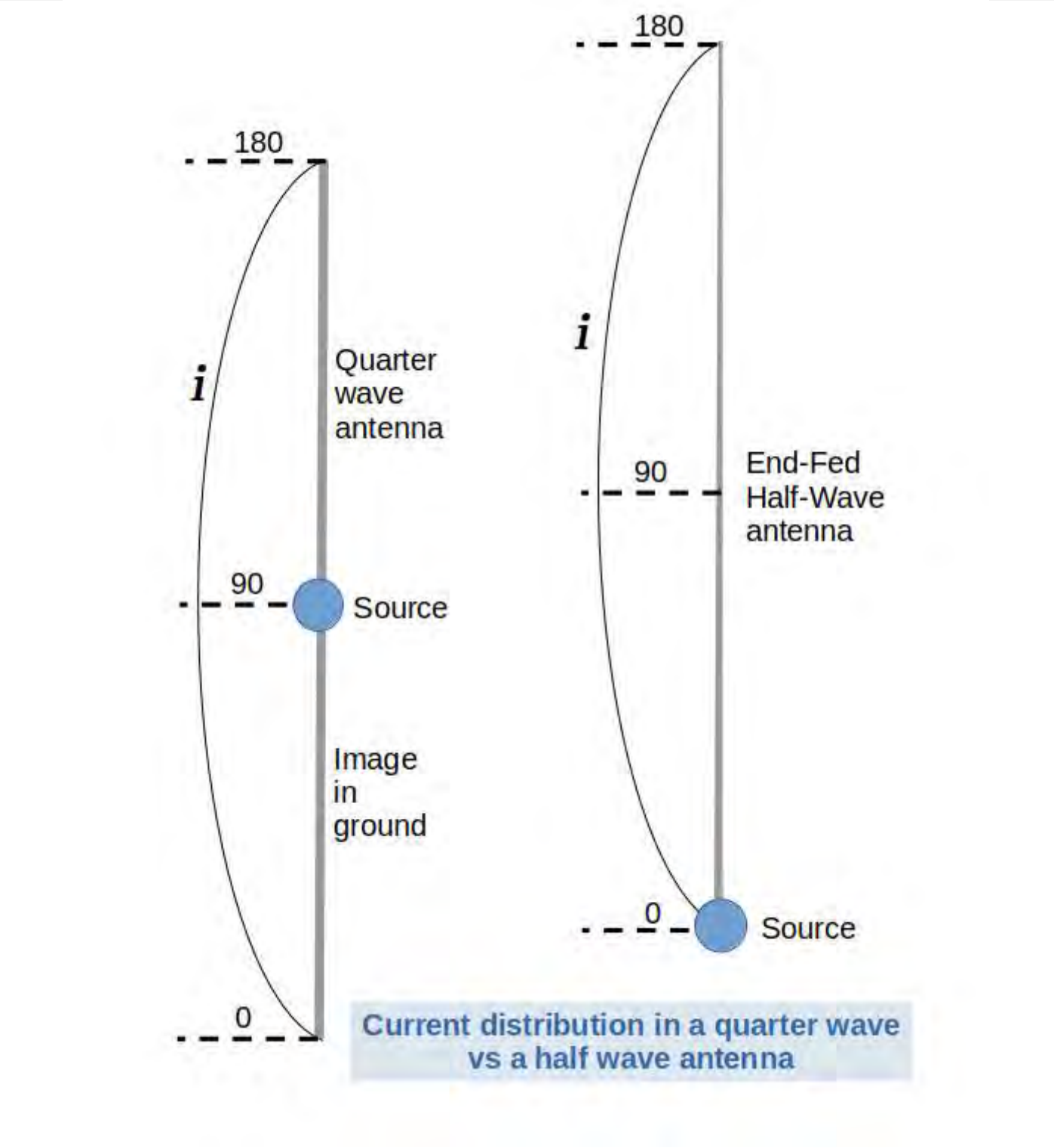
Since we will be dealing with very small values it is important to measure everything with precision. The battery had an open circuit voltage of 9.49 volts which dropped to 9.13 volts under load. The 390 ohm resistor had a measured value of 386 ohms. We can then calculate the maximum current in the circuit to be 23.6 milliamps if the coil has zero resistance. The resistor would need to dissipate 215 mW so a standard junk box quarter watt component is fine. The actual current measured was 22.3 milliamps so clearly the coil has finite resistance.

Then the voltage drop across the coil was measured using the DMM's 200mV range. It measured just 3 millivolts. So now we have all the data needed to find the resistance of the coil. Using Ohm's Law (R=V/I), the measured resistance came out to be 0.13 ohms.

The loading coil measured so far is a 6.6 microhenry coil wound with 20 awg insulated solid copper wire on a short length of half-inch Schedule 40 PVC plumbing pipe. This is the loading coil used with the Coil Loaded End-Fed Half-Wave (CLEFHW) discussed in the last couple of posts.

I also measured a ham-made "Wolf River Coil" style of loading coil that I have used with ground-mounted quarter wave vertical antennas. It was wound with stainless steel wire on a 2-inch diameter air-core PVC pipe. This is a significantly larger coil and its measured resistance was a staggering 5 ohms!

We will be using these two coils in a comparison exercise in just a minute. But first, let's look at how loading coils might be used in (1) a ground-mounted coil-loaded quarter-wave vertical and (2) the *Ham Radio Outside the Box* Coil-Loaded End-Fed Half-Wave (CLEFHW) vertical antenna.



In the diagram above we can see, on the left, a classic quarter-wave vertical antenna. If it is mounted on the ground it will have an identical image in the ground and a lot of energy will be wasted cooking earthworms. Usually a set of radials is employed to reduce ground losses. If the antenna length is less than a quarter wave a loading coil may be used to electrically lengthen the antenna.

Where to place the loading coil?

A quarter wave vertical antenna will usually incorporate a loading coil at its base or at its center. Theoretically the coil could be placed at the top of the antenna but there is a gotcha. The higher up the antenna at which the coil is placed, the greater the inductance required. Greater inductance means a larger coil with increased ohmic losses. Notice also the current distribution on a quarter wave whip. The current maximum is at the base of the whip which (if what "everybody" knows is correct) will result in the greatest loss.

Why the *Ham Radio Outside the Box* CLEFHW does better

Now compare the End-Fed Half-Wave antenna on the right-hand side of the diagram with the quarter-wave already discussed. The current distribution pattern is the same except that instead of a quarter-wave image in the ground we now have a physical half-wave above ground. One important caveat should be acknowledged here. The CLEFHW is an electrically lengthened short whip that relies on a base-loading coil to operate. The feedpoint (or source) is at the bottom of the antenna where there is a current minimum so the ohmic losses should be minimal. Our CLEFHW loading coil is very small with very little resistance so, combined with its position at the current minimum, it should be more efficient than a larger coil at the current maximum of a quarter-wave antenna.

The lesson to be learned from electricity transmission lines.

Power companies carry their generated electricity at very high voltages. Why? If the voltage is very high the current is very low and i^2xR losses are correspondingly low. If this wasn't done a portion of the power in the transmission lines would be lost as heat.

Now we can get down to the heart of the challenge. We have been able to measure the resistance of our loading coils, now it's time to calculate the actual losses incurred in each case. We are going to assume our operation is QRP with a power of 5 watts. *Ham Radio Outside the Box* acknowledges that in some very rare cases hams actually use higher power - no really it's true!

First up, the short whip with a big, fat loading coil at its base. The feedpoint impedance depends on proximity to ground and other factors, so let's assume it's a nice nominal 50 ohms. Using the formula V=(P*R)^0.5 we can calculate the voltage at the feedpoint to be 15.8 volts. From there we can deduce the current to be 316 mA (i=P/V).

Wow ... that much power is lost?

We now have to make another assumption - the entire length of the loading coil is being used. Of course, if the coil is tapped part of the way along its length the numbers will be different. My coil has a resistance of 5 ohms (gasp) so the power lost, using P=i^2*R = 500 mW. Wow and double wow, that's an enormous - no wait - insignificant 10% of our transmitted power.

So how much power is lost in the CLEFHW's coil?

Let's run the same math for the CLEFHW. The voltage at the feedpoint works out to be 112 volts and the current is 44.6mA. The calculated ohmic loss based on a coil resistance of 0.13 ohms works out as 5.8 milliwatts. That is around 100 times less than the base-loaded quarter-wave whip. Well bless my soul.

Alternatives?

I am quite aware of other ways to change the electrical length of an antenna. We have already briefly dealt with "top hats" (capacitance hats) in a recent post. There is also linear loading - a concept I am currently playing around with and will discuss in a future post.

This post specifically deals with the most common method by using inductive loads. Are they lossy? Well yes; but are they sufficiently lossy to be of concern? Maybe not. You form your own opinion.

Errors, Omissions and Dumb Stupidity Excepted

Please don't accept my analysis as fact. I am an expert in the sense that X is an unknown quantity and "spurt" is a drip under pressure. I welcome any constructive criticism of this post. Please let me know your thoughts in the comments.

The Famous BARK Frequency Guide.

Compiled by members of Boland Amateur Radio Klub in Cape Town -North which services the additional areas of the Cape Winelands and further afield to the farming communities of the Cape Province.

Guide suggested, researched and initiated by:

Avron Lucas ZS1LA and researched, created and produced by

Marius Lubbe ZS1ML

Comprehensive Guide to Radio Frequencies, Licensing, and Usage

This guide compiles a comprehensive list of radio frequencies across various categories, licensing details, and specific uses for amateur radio, air band, marine, CB radio, and more. It also includes regulations and operational guidelines to ensure effective and legal use of radio frequencies.

Amateur Radio Licensing

What Is an Amateur Radio License?

An amateur radio license is an authorization issued by a country's regulatory authority (e.g., FCC in the US, ICASA in South Africa). It grants privileges to use specific radio frequencies for non-commercial purposes such as communication, experimentation, and emergency services.

Licensing Process

1. **Study**: Prepare using online courses, study guides, or amateur radio clubs.
2. **Register for the Exam**: Contact the regulatory body or accredited organizations. In South Africa this is regulated by the SARL www.sarl.org.za
3. **Training and study:** Classes and training material is available from some clubs in South Africa, notably at BARK. Contact RAE@BARK.org.za for local training in the whole South Africa via live Online video and chat.
4. **Take the Exam**: Pass a multiple-choice test covering radio theory, operating practices, and regulations. Bark usually have at least one but sometimes two training venues in our wider area. One exam centre will always be in Cape Town North or Stellenbosch.
5. **Apply for a License**: Submit your application, exam results, and fees (if applicable). All this must be arranged beforehand, contact rae@sarl.org.za or RAE@BARK.org.za
6. **Receive Your Call Sign**: Once approved, you'll receive a unique call sign.

License Classes

Licenses in South Africa are divided in two classes, a Junior class and the senior class:

South African classes and exams are not tiered and you only have to write and pas's once to receive your full privileges across all bands.

Reciprocal Licensing

Many countries have reciprocal agreements, allowing licensed operators to use their privileges abroad. For example, CEPT licensing permits operation across Europe.

Amateur Radio Bands and Their Uses

HF Bands (High Frequency)

Band (Meters)	Frequency Range (MHz)	Mode	Common Uses
160	1.810 - 2.000	SSB/CW	DX, contesting, and regional nets
80	3.500 - 3.800	SSB/CW	Local/regional communication
40	7.000 - 7.200	SSB/CW	Daytime nets, DX
20	14.000 - 14.350	SSB/CW	Global DX, contests
10	28.000 - 29.700	SSB/FM	Local FM repeaters, solar peaks

HF Band Call Frequencies

Band (Meters)	Mode	Call Frequency (MHz)
160	CW	1.810
80	CW	3.560
40	CW	7.030
20	CW	14.060
10	CW	28.060
160	SSB	1.850
80	SSB	3.750
40	SSB	7.150
20	SSB	14.200
10	SSB	28.400

Digital Modes on HF Bands

Band (Meters)	Frequency Range (MHz)	Mode	Common Digital Calling Frequencies (MHz)
160	1.810 - 2.000	FT8	1.840
80	3.500 - 3.800	FT8	3.573
40	7.000 - 7.200	FT8	7.074
20	14.000 - 14.350	FT8	14.074

VHF and UHF Bands

Band	Frequency Range (MHz)	Mode	Common Uses
6 Meters	50.000 - 54.000	SSB	DX during Sporadic-E openings
2 Meters	144.000 - 148.000	FM	Local repeaters, emergency nets
70 cm	430.000 - 440.000	FM	Digital modes, satellite contacts

Airband Frequencies

HF Airband Frequencies

Frequency (kHz)	Mode	Description	Area
2854	USB	SAT Communication	South Atlantic
3013	USB	Johannesburg (SAA Operations)	Springbok
8826	USB	Johannesburg ATC	Johannesburg

VHF Airband Frequencies

Frequency (MHz)	Description	Notes
118.100	Cape Town Tower (FACT TWR)	Relay on 453.925 MHz FM
121.500	International Emergency Guard Frequency	Mayday Channel
127.000	Cape Town ATIS	Continuous broadcasts

Marine Frequencies

General Marine Frequencies

Frequency (MHz)	Mode	Description	Notes
156.300	FM	Inter-ship/Yacht Racing	Channel 06
156.800	FM	International Distress	Channel 16

Expanded Marine Frequencies

Frequency (kHz)	Mode	Description	Notes
6215	USB	Simplex Distress/Calling	ITU Standard
2182	USB	Cape Town Radio	Distress/Calling

CB Radio Frequencies

Frequency (MHz)	Mode	Description
27.185	AM/USB	Truckers Channel 19
27.275	AM/USB	General Calling

PMR Frequencies

Frequency (MHz)	Mode	Description
446.00625	FM	Free Public Access
446.09375	FM	Free Public Access

Specialized Channels

Frequency (MHz)	Mode	Description
433.075	FM	Remote Control Channel 1
433.150	FM	Remote Control Channel 4
435.000	FM	Satellite Uplink
437.000	FM	Satellite Downlink

ORRA 4X4 Frequencies

Amateur Radio Regulations

- **Frequency Allocations**: Operate only on designated amateur bands.
- **Power Limits**: Adhere to maximum power levels to avoid interference.
- **Prohibited Activities**: No broadcasting, encryption, or commercial use.
- **Emergency Use**: Amateur radio can support emergency communications during disasters.
- **Station Identification**: Identify your station with your call sign at regular intervals.

For more details, refer to national regulations or the ITU Amateur Radio Guidelines.

The Off-Road Radio Association (ORRA) in South Africa manages specific radio frequencies for 4x4 enthusiasts to facilitate effective communication during off-road activities.
ORRA 4x4 Frequencies:
ORRA administers both 29 MHz and VHF (Very High Frequency) channels for off-road communication.
29 MHz Frequencies:
The 29 MHz band, often referred to as "29 Megs," includes several channels allocated for various services, including off-road activities.
For 4x4 use, the following channels are commonly utilized:

Channel	Frequency (MHz)	Assigned Use
14	29.8725	4x4 Off-Road Use
15	29.8850	4x4 Off-Road Use
16	29.8975	4x4 Off-Road Use

Bi-Comm
VHF Frequencies:
In addition to the 29 MHz channels, ORRA has been allocated VHF frequencies for 4x4 communication.
These frequencies are in the high-band VHF section (approximately 146 MHz to 174 MHz).
The specific VHF frequencies assigned to ORRA are managed internally and are available to licensed members.
Usage Rules:

- **Licensing:** All radio transmitting equipment used within South Africa is required to be licensed by the end user with ICASA (Independent Communications Authority of South Africa) as per the Telecommunications Act.

ORRA facilitates this process by issuing user authorizations to members of recognized off-road clubs, allowing them to legally use the ORRA frequencies within South Africa.
Orra

- **Equipment:** Only approved radio equipment should be used.

Modifying radios to operate on ORRA frequencies is not recommended due to technical and legal implications.
Ensure that your equipment is compatible with the assigned frequencies and meets the necessary technical standards.
Orra

- **Conduct:** Users must adhere to proper radio etiquette, keeping communications concise and relevant to off-road activities.

Since the frequencies are shared, it's important to respect other users on the channel and be aware that communications are not private.
Orra

Licensing Process:

To obtain a license:

1. **Membership:** Join a recognized off-road club affiliated with ORRA.
2. **Application:** Submit an application through your club to ORRA, providing necessary personal details and information about your radio equipment.
3. **Approval:** Upon approval, ORRA will issue a user authorization card, granting you legal access to the designated frequencies.

This authorization allows you to use the ORRA frequencies within the boundaries of the Republic of South Africa.
Orra
For trips to neighboring countries like Namibia and Botswana, additional authorizations or temporary licenses may be required.
Members planning such trips should contact ORRA's administrator at least four weeks before departure to obtain the necessary documentation.
The Off-Road Radio Association (ORRA) in South Africa manages specific VHF frequencies for 4x4 communication. These frequencies are allocated to facilitate effective communication among off-road enthusiasts and are shared with other users. To minimize interference, ORRA employs Continuous Tone-Coded Squelch System (CTCSS) tones, which allow multiple user groups to share the same frequency without overhearing each other's communications.

ORRA VHF Frequencies and Channel Assignments:

Channel	Frequency (MHz)	CTCSS Tone (Hz)	Purpose
ORRA1	161.1500	131.8	Primary communication channel with tone 131.8 Hz
ORRA2	160.4500	131.8	Secondary communication channel with tone 131.8 Hz
ORRA3	161.1500	118.8	Alternate communication channel with tone 118.8 Hz
ORRA4	160.4500	118.8	Alternate communication channel with tone 118.8 Hz
ORRA5	152.6625	131.8	Additional communication channel with tone 131.8 Hz
ORRA6	152.6625	118.8	Additional communication channel with tone 118.8 Hz
ORRA7	152.6625	None	Communication channel without CTCSS tone; open to all users
ORRA8	161.1500	None	Communication channel without CTCSS tone; open to all users
ORRA9	160.4500	None	Communication channel without CTCSS tone; open to all users

Note: Channels without a CTCSS tone (ORRA7, ORRA8, ORRA9) are open to all users and may experience more interference.

Purpose of Each Channel:

- **ORRA1 and ORRA2:** Primary and secondary channels for general 4x4 communication among ORRA members, utilizing a 131.8 Hz CTCSS tone to reduce interference.
- **ORRA3 and ORRA4:** Alternate channels with a 118.8 Hz CTCSS tone, providing additional options for communication when primary channels are busy.
- **ORRA5 and ORRA6:** Additional channels operating on a different frequency (152.6625 MHz) with 131.8 Hz and 118.8 Hz CTCSS tones, respectively, offering flexibility in various communication scenarios.
- **ORRA7, ORRA8, and ORRA9:** Channels without CTCSS tones, open to all users. These channels may be more susceptible to interference due to the absence of tone filtering.

Usage Guidelines:

- **Licensing:** Operating on these frequencies requires a valid user authorization from ORRA, which acts as a licensing body in collaboration with the Independent Communications Authority of South Africa (ICASA).
- **Equipment:** Users must utilize VHF radios capable of operating within the 146–174 MHz frequency band and programmed with the correct frequencies and CTCSS tones as per ORRA's specifications.
- **Etiquette:** Adhere to proper radio communication protocols, keep transmissions concise, and avoid unnecessary chatter to ensure efficient use of the shared channels.
- **Interference:** Be mindful that these frequencies are shared with other users. The use of CTCSS tones helps minimize interference, but users should remain courteous and avoid disrupting ongoing communications.

For more detailed information and to apply for user authorization, please visit ORRA's official website:
Orra
Mistakes and or misinformation: Please feel free to correct us where we may have strayed from the correct data. zs1ml@outlook.com

How ghost radio signals could hold the key to finding missing flight MH370

Story by Christopher Jasper

Illustration: MH370 plane on blue background with radio signals being emitted around itt

Transmissions from amateur radio enthusiasts may hold the key to locating the wreckage of the Malaysia Airlines jet that vanished a decade ago in one of the greatest aviation mysteries.

The Malaysian government announced on Friday that it had agreed to resume the search for the remains of MH370, the Boeing 777 that disappeared in March 2014 while carrying 239 people.

Efforts will focus on a new area of seabed covering around 5,800 square miles – slightly bigger than Northern Ireland – according to Anthony Loke, the Malaysian transport minister.

The search will be led by underwater exploration firm Ocean Infinity, which conducted the last sweep in 2018. This time around, the investigation is expected to draw on a new area of research involving so-called WSPR – pronounced "whisper" – transmissions from amateur radio operators.

An acronym for Weak Signal Propagation Reporter, WSPR was designed as a way of sending and receiving low-power transmissions to test the capabilities of antennas used by amateur radio enthusiasts – known as radio hams – and the extent of their reach.

WSPR transmitters send thousands of low-power radio pulses around the world every two minutes, with any given signal disturbed should an aircraft cross it, or so the theory goes.

Richard Godfrey, a retired aerospace engineer, who has worked with Nasa, Boeing and Airbus, has advanced the theory that an examination of historical WSPR data might help pin down the flight path of MH370.

His own analysis pointed to a search area with a radius of less than 20 miles, some 1,000 miles west of Perth, Australia.

Mr Godfrey told The Telegraph he understood the target zone he identified would be covered by Ocean Infinity's new search. The company will also examine parallel strands of research such as examinations of hydro-acoustics data from the time of the disappearance.
The BBC explored the WSPR hypothesis in the documentary Why Planes Vanish: The Hunt for MH370 in March this year on the 10th anniversary of the tragedy.
Mr Godfrey said on the programme that "there's no radar coverage of the Indian Ocean but there are radio signals" and that these amount to a "trail of breadcrumbs."
He claimed to have found 130 disturbances to signals crossing the Indian Ocean on the night that MH370 vanished, possibly indicating its final trajectory.
However, the creator of WSPR technology has suggested that historical data from the network is of little use for tracking aircraft. Nobel laureate Prof Joseph Taylor, of Princeton University, an astrophysicist and radio ham himself, developed WSPR based on his research into pulsars.
Even still, support for the theory persists. Prof Simon Maskell, a computer engineer and professor of autonomous systems at the University of Liverpool, said it would be premature to reject WSPR's potential for tracking down MH370.
He said the application of a so-called particle filter developed by Australia's Defence Science and Technology Group could help exclude unhelpful data and further refine the search area.
Prof Maskell, who has been advising Ocean Infinity, is in the process of testing the accuracy of WSPR-based tracking using real-life data from planes in the air on a single day.
His team is also using the same particle filter technology to enhance predictions for the crash site based on where debris from the plane washed ashore.
He said: "The important question is whether all of this analysis usefully reduces the search area. As soon as you can definitely say the plane couldn't have headed north or it couldn't have gone this far south you have narrowed things down and that is useful."
Ocean Infinity, which was founded in 2017 and has operations in Southampton and in Austin, Texas, had submitted proposals to resume the search in May.
Mr Loke said the marine robotics company had been awarded an 18-month contract on a "no find, no fee" basis but would receive $70m (£56m) if substantial evidence of the plane's final resting place – and that of its 227 passengers and 12 crew – was detected.
He said: "The data has all been presented. Our team has gone through and they felt that it is credible.
"Nobody knows for sure. It has been over 10 years. We hope this time will be positive, that the wreckage will be found and give closure to the families."
No precise location for the new search area was given, though Prof Maskell said he understood that it would involve a broadening of the previous favored search area by about 20 sq km.
Flight MH370 sent its last transmission 40 minutes after departing Kuala Lumpur bound for Beijing. Soon after, its transponder was turned off, with military radar revealing that it then turned south, crossed the Malaysian peninsula and headed out over the Indian Ocean.
Data from automatic connections with an Inmarsat satellite indicated a broad arc that the plane could have been on.

Extrapolations based on how much fuel it had on board led searchers from Malaysia, Australia and China to focus on a 46,000 sq mile area of open sea west of Perth.
While debris from the aircraft washed up along the coast of Africa and on islands in the Indian Ocean, the search for the plane ultimately proved fruitless.
A report into the disappearance said that while MH370 was most likely deliberately flown off course, an explanation of what happened would require the wreckage to be found.
Oliver Plunkett, Ocean Infinity's chief executive, said the official go ahead for the new mission after a long interval was "great news."
He said: "We look forward to sharing further updates in the new year once we've finalized the details and the team gets ready to go."

Koop en Ruil hoekie:

Kenwood TS570S HF met mikrofoon en krag kabel, = R8500
RS-102 SWR & Krag meter (1.8-200Mhz. = R800

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- QYT KT8900 Programming Cable @ R280
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VOORSIENER GIDS / SUPPLIER GUIDE

Aanbevelings vanaf lede, waar ons radio amateurs, verskeie goeters en katoeters, betroubaar kan kry.
The list I wish I had when I started, proven and trusted suppliers of all sorts of components and material.

Handelaar / Supplier	*Adres / Address*	*Items*	*Notas*
Aluminium Alloys Cape Town	14 Binder Street Entrance opposite Tygerberg Engine Rebuilders, Parow East, Cape Town, 7501 021 911 5032	Aluminium Pipe of all lengths and sizes, great for masts, deliver daily.	
Bombastik.co.za	107 Kenridge Avenue, Kenridge, Durbanville. 082 785 7763 info@bombastik.co.za	Geat variety of ham radio accessories, antennas and tools at affordable prices. Drivers, software and recommended video lists are on our site. 'Great Service' is our motto!	
Communica	36 Marine Drive, Paarden Eiland, Cape Town, 7405. Phone: +27 (021) 510 2055 Fax: +27 (021) 447 0959 Sales: salesct@communica.co.za Web: https://www.communica.co.za/	Komponente, Connectors, Coax, verskeie draad, kabels en alles wat jou hart begeer.	
Cords.co.za	**Unit 13, Northgate Business Park, Gold Street, Northgate Estate Brooklyn, Cape Town, 7405** 021 703 5836 sales@cords.co.za	They have a particular strength in locating "hard-to-find" cable types. CORDS makes custom retractile (coiled) cords, harness and loom assemblies; and offers wire and cable cutting, stripping, crimping, soldering, and finishing services.	
HotTools	Jacques Scholtz ZS6JPS – Managing Director & Imports Landline +27 11-452-4446 (ext 111) Cell +27 61-785-0972 / Skype me here Please feel free to try us for any quote requests – email sales@hottools.co.za Any compliments or complaints, please direct to our sales manager here / Click here to download our catalogue	30A kragbronne, SWR meters, coax, soldeersel en soldeer stasies, oskilloskope, multimeter, krimpers en allerhande gereedskap. Baie vriendelik en behulpsaam	

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Mantech	https://www.mantech.co.za/ 24 Mail Street, Western Province Park, Epping +2721 535 3150 / +2787 233 5006 Email: cape@mantech.co.za	Coax van alle tipes, Connectors en elektroniese items en toerusting. Elektriese en elektroniese komponente.
RFG Communications	Gants industrial area in Strand, Western Cape Tel: (021) 853 5140 General email: info@rfgcom.co.za Sales email: wayne@rfgcom.co.za https://www.rfgcom.co.za/	sales of two-way radio Kenwood, Icom and Motorola.
Sam Ford	**Sam's Radio Accessories** 9 Carnation St, Gallo Manor, Sandton 011 802 2976 Email sam.ford@radioacc.co.za http://radioacc.co.za/	Radio's, Radio komponente en alles wat jy sal verwag van 'n goeie radio handelaar. Hy koerier maklik en billik.

Noem dat jy die advertensies hier gesien het asb.

See next page for: IARU Region 1 HF Band Plan

IARU Region 1 HF Band Plan

HF 160m – 6m Band Plan			
Frequency	Mode	Preferred Mode and Usage	Compiled by ZS1GWL
160m Band:			
1 810 – 1 838	CW	CW, 1836: QRP Centre of Activity	
1 838 – 1 840	LSB	Narrow band modes	
1 840 – 2 000	LSB	All modes – digimodes	
80m Band:			
3 500 – 3 510	CW	CW, priority for intercontinental operation	
3 510 – 3 560	CW	CW, contest preferred, 3 555: QRS Centre of Activity	
3 560 – 3 570	CW	CW, 3 560: QRP Centre of Activity	
3 600 – 3 650	LSB	All modes, SSB contest preferred, 3 630: Digital Voice Centre of Activity	
3 650 – 3 700	QRP	All modes, 3 690: SSB QRP Centre of Activity	
3 700 – 3 775	LSB	All modes, SSB contest preferred	
3 775 – 3 800	LSB	All modes, SSB contest preferred, priority for intercontinental operation	
60m Band:			
5290	WSPR	WSPR Beacons for the propagation project	
5 350.0 – 5 354.0	CW	CW, Narrow band modes – digimodes	
5 354.0 – 5 366.0	SSB	All modes, USB recommended for voice operation	
5357	SSB	FT8 CoA	
5360	SSB	SOTA/WWFF CoA (international)	
5 366.0 – 5 366.5	SSB	Weak signal narrow band modes	
5 366.6 – 5 450.0	SSB	All modes, USB recommended for voice operation, 5370: Calling	
5390	SSB	SOTA/ZSFF/WAGS CoA	
5410	SSB	Emergency CoA (SARL Hamnet)	
40m Band:			
7 000 – 7 040	CW	CW, 7 030: QRP Centre of Activity	
7 050 – 7 100	SSB	All modes, SSB contest, 7 070: Digital Voice Centre, 7 090: SSB QRP	
7 100 – 7 130	SSB	All modes, 7 110: Reg 1 Emergency Centre of Activity	
7 130 – 7 175	SSB	All modes, SSB contest preferred, 7 165: Image Centre of Activity	
7 175 – 7 200	SSB	All modes, SSB contest preferred, priority for intercontinental operation	
30m Band:			
10 100 – 10 140	CW	CW, 10116: QRP Centre Of activity	
10 140 – 10 150	SSB	Narrow band modes – digimodes	
20m Band:			
14 000 – 14 060	CW	CW, contest preferred, 14 055: QRS Centre of Activity	
14 060 – 14 070	CW	CW, 14 060: QRP Centre of Activity	
14 099 – 14 101	IBP	IBP, exclusively for beacons	
14 101 – 14 125	SSB	All modes	
14 125 – 14 300	SSB	All modes, SSB contest, 14 130: Digital Voice Centre, 14 195: Priority DX	
14 300 – 14 350	SSB	All modes, 14 300: Global Emergency centre of Activity	

17m Band:		
18 068 – 18 095	CW	CW, 18 086: QRP Centre of Activity
18 111 – 18 120	SSB	All modes – digimodes, automatically controlled data stations
18 120 – 18 168	SSB	All modes, 18 130: SSB QRP Centre of Activity
15m Band:		
21 000 – 21 070	CW	CW, 21 055: QRS Centre of Activity, 21 060 – QRP Centre
21 120 – 21 149	SSB	Narrow band modes
21 151 – 21 450	SSB	All modes, 21 180: Digital Voice Centre, 21 360: Global Emergency
12m Band:		
24 890 – 24 915	CW	CW, 24 906: QRP centre of activity
24 931 – 24 940	SSB	All modes – digimodes, automatically controlled data stations
24 940 – 24 990	QRP	All modes, 24 950: SSB QRP Centre of Activity
10m Band:		
28 000 – 28 070	CW	CW 28 055: QRS Centre of Activity, 28 060 – QRP Centre
28 150 – 28 320	SSB	All modes – digimodes, automatically controlled data stations
28 320 – 29 100	SSB	All modes, 28 330: Digital Voice Centre of Activity, 28 360: QRP Centre
29 100 – 29 200	SSB	All modes – FM simplex – 10 channels
29 200 – 29 300	SSB	All modes – digimodes, automatically controlled data stations
29 300 – 29 510	SAT	Satellite Links
29 520 – 29 590	SSB	All modes – FM repeater input (RH1 – RH8)
29 600	SSB	All modes – FM calling channel
29 610	SSB	All modes – FM simplex repeater (parrot – input and output)
6m Band:		
50 000 – 50 100	CW	CW, 50 080: Beacons, 50 090: Centre of Activity,
50 100 – 50 500	SSB	All modes
50 100 – 50 130	SSB	Intercontinental, 50 11: DX Calling
50150	SSB	SSB Centre oc Activity
50 255 – 50 400	SSB	Digimodes
50 500 – 52 000	SSB	All Modes
50510	SSB	SSTV (AFSK)
50 520 – 50 540	SSB	Simplex FM Internet gateways
50550	SSB	FAX
50600	SSB	RTTY(FSK)
50 620 – 50 750	SSB	Digital Communications
50630	SSB	Digital Video Calling
51 210 – 51 390	SSB	FM/DV Repeater inputs
51 410 – 51 590	SSB	FM/DV Repeater Simplex
51510	SSB	FM Calling Freq
51 810 – 51 990	SSB	FM Repeaters Output

Tot volgende keer!

Lees gerus ons radio artikels op www.learnminds.co.za en www.bombastik.co.za

73, Marius ZS1ML