



ZR6FD logo

drukwerk papier / paper
printing ZS6KR
ZS6BAQ ZR6FD

WATTS

12 - 2003

Year 69

Monthly newsletter of the Pretoria Amateur Radio Club
Maandelikse nuusbrieff van die Pretoria Amateur Radio Klub.



PARC, PO Box 73696 Lynnwood Ridge 0040, RSA



<http://www.qsl.net/zs6pta> (courtesy ZS6DX)

Bulletins : 145,725MHz 08:45 Sundays / Sondae
Relays : 1840, 3700, 7066, 10135, 14,200 MHz
depending on season

Swapshop: After bulletin 2m and 40m (also on-line)

Management team / Bestuurspan 2003-2004:

Chairman, SARL liason, WATTS newsletter	Hans Kappetijn	ZS6KR	hans@qrv.co.za	012-333-2612
Vice Chairman, P.R., Fleamarket, RAE, Projects	Almero Dupisani	ZR6RY	dupisani@postino.up.ac.za	012-567-3722
Sekretaris Tydrenne, Toekennings	Johan de Bruyn	ZR6JHB	johandbr@absa.co.za	012-803-7385
Treasurer Clubhouse, Database	Richard Peer	ZR6CK	peerrk@safrica.com	012-333-0612
Klubfasiliteite, Sosiaal, Vlooiemark	Willie Greyling	ZR6WGR	willie@up.ac.za	082-940-2490

Co-opted / Geko-opteer:

Auditeur Tydrenne	Egbert Begeman	ZS6AZG	begeme@unisa.ac.za	012-347-1905
Webmaster (temp)	Johann de Beer	ZR6YV		011-918-1060
RAE	Rudi Venter	ZS6DX	zs6dx@ananzi.co.za	012-993-4848
DF Hunts, Morse testing	Brian Scott	ZR6BJS	ano@mighty.co.za	084-312-7407
Tegnies	Bill Ingleson	ZS6KO		012-331-2327
Repeaters	Johan Lehmann	ZR6ANF	jlehmann@csir.co.za	083-300-8677
Repeater Maintenance	Hans Gurtel	ZR6HVG	adele123@absamail.co.za	082-940-0623
	Willie du Plessis	ZS6AEA	hesterdup@webmail.co.za	012-565-5555 083-653-2101

In this issue

- Editorial /
- HF Field Day
- Club meeting minutes
- Member news
- Diary
- General / Technical
- Page eight

in hierdie uitgawe

Redaksioneel
/ HF Velddag
Klubvergadering notules
Ledenuus
Dagboek
Algemeen / Tegnies
Bladsy agt

Next meeting

Date: 04-12-2003
Time: 19:30 for 20:00
PARC Clubhouse,
South Campus,
University of Pretoria.
SE cnr University and
Lynnwood roads.

Editorial

It was rather disappointing to see that Club support by our ZS members for the SARL HF Field Day was very meager despite the fanfare last month. The chance to operate HF under 'realistic' field conditions with some 20W, wire antennas, batteries, and an inventory of cables, wires, tools, food, drink and shelter can be quite a challenge compared to a permanent installation. Not to forget the camaraderie aspect when a few operators can work in shifts to the common goal. Support and companionship from visitors dropping in for a short while would be a bonus. C'mon ZS guys, have a change of heart and climb out the 'Ham' groove – contesting is one way to proof your alertness, readiness and equipment condition for other services that you may have to render.



**Bill ZS6KO camped for the weekend at Roodeplaat Dam Hans ZS6KR het Saterdag die middag-skof behartig
Johan ZR6JHB en Doreen ZR6DDB het vanaf Sondagoggend kom kuier
Roodeplaat dam en omgewing word goed bestuur, het boomryke staanplekke met goeie geriewe en is ook die
ideale plek vir vrou en kinders om te ontspan.**

Redaksioneel

Dit was nogal teleurstellend om te sien hoe min Klub-belangstelling daar was van ons ZS lede by die SARL HF Velddag, desondanks die ophef verlede maand. Die geleentheid om onder 'realistiese' veldomstandighede met 20W, draadantennas, batterye, en 'n inventaris van kables, drade, gereedskap, kos, drinkgoed en skuiling 'n stasie te bedryf, kan 'n groot uitdaging wees in vergelyking met 'n gerieflike permanente installasie. Die kameraderie aspek as verskeie operateurs skofte werk vir 'n gemene doel, is nie te versmaai nie. Bystand en ondersteuning van besoekers wat 'n tydjie kom inval, kan 'n bonus wees.

Kom julle ZS ouens, bedink die situasie en klim uit daardie 'Ham' groef – wedstryd-deelname is een manier om jou skerpsinnigheid, paraatheid en apparaat-toestand te beproef vir ander dienste wat jy dalk moet lewer.

Gepraat van dienste – talking of rendering service, it will be a miracle if ICASA and Municipalities will give the same recognition and concessions to Amateur Radio as stated in a recent article in *World Radio*:

California Governor Signs Amateur Radio Protection Bill

Governor Davis signed legislation today that would ensure that Amateur Radio stations' communication will not be obstructed by any city or county ordinance. Due to the wide number of volunteers who utilize their Amateur Radio licenses during times of natural disasters or emergency situations, maintaining amateur radio stations' ability to broadcast is an important resource to security and rescue aid.

"Licensed Amateur Radio operators give thousands of hours of volunteer service to the state and local governments," Gov. Davis said. "They are an important part of our public safety network."

AB 1228 by Assembly member Bob Dutton (R-Rancho Cucamonga) mandates that city or county ordinances that regulate Amateur Radio station antenna do not obstruct the communication abilities of the station. It also allows the antenna structures of the radio stations to be constructed to effectively maintain their broadcast services;

Minutes of the monthly club meeting of the Pretoria Amateur Radio Club held at the South Campus of the University of Pretoria on 13 Nov. 2003

- 1a. **Welcome** : Hans ZS6KR declared the meeting open and welcomed all present.
- 1b. **Attendance** : The meeting was attended by 22 members and 4 visitors.
Visitors were Ivan OK1LL and sw Vlasta and Nico ZS6JNT (soon ZS1KT) as well as Mary, sw of Bill ZS6KO
- 1c. **Apologies** : ZR6JHB, ZR6RY, ZR6WGR, ZR6OLM writing exams and ZR6HAP, ZR6ESP ZS6AQS
- 1d. **Lief en leed** : ZS6QA Jac Roux nog in die Eugene Marais hospitaal.
ZS2CWP Calie in Unitas hospitaal
- 1e. **Minutes of the previous meeting**: The minutes as published in Watts were approved.
Proposed by ZR6BJS seconded by ZS6UT
- 1f. **Matters arising**: none
2. **Club activities**
- 2a. **DF Hunt** : 22 Nov ending in get-together at repeater site- arrangements to be announced
- 2c **Mega-Fleamarket**: Nothing to report
- 2e. **Tydrenne** : 7 Desember kom alle betrokkes bymekaar by PMC Silverton. Bevestig bespreking asb met Johan ZR6JHB.
- 2f. **Social** : 15 November bring en braai by QTH van Tjerk ZS6P 18:00
Remember Club social after meeting on 4 December.
- 2g. **Financial** : Richard ZR6CK - reported on the Club's current account.
Paid-up membership is now 110 with 21 still outstanding.
e-Mailing WATTS is saving us approximately R110 per month in running costs.
3. **Ham diary** : The meeting was informed of the various local and international amateur events during November and early December.
15 Nov: Bring and Braai at QTH of Tjerk ZS6P from 18:00
22 Nov: DF hunt with get-together at 2m repeater site.
04 Dec: Year-end club meeting and social.
4. **General** : a) Ed ZS6UT showed an interesting stand-alone weather monitor and display.
The monitor communicates with the display by wireless. Manufacturer Oregon Scientific. Further enquiries to Ed.

b) Johan ZR6ANF offered to put IRLP facilities on our 2m repeater once or twice a week as many of our members do not have 70cm radios or are out of range of the present 70cm repeater. The meeting agreed and the Committee will finalize the issue next week.

c) Johan also mentioned that the APRS gateway was operational 24 hrs a day on 144,675MHz (soon moving to 144,800MHz) This can be viewed with UI-View16 together with a TNC or AGW software and a sound card.
It was agreed that he would give a talk on this subject in January.
5. **Presentation** : Pine ZS6OB was again in his element and had everyone's attention on the subject of **tuned baluns***. His presentation was, as usual, well prepared with transparencies and constructed hardware to illustrate application.
6. **End** : The meeting closed at 21:30 and refreshments were attended to by Molly.
Not to forget Ivan OK1LL who brought a few six-packs of Czech beer and handed in membership applications for himself and Vlasta.
7. **Next meeting** : Thursday January 8, 2004

ZS6KR



*Ed: No balun and you will earn the Worked All Neighbours Award (WANA)

Christmas



Kersfees

It is difficult at the time of writing to realize that the Festive Season is soon upon us. The January issue of Watts will probably appear after Christmas. **The Management Team of PARC will now take the opportunity to wish you and your loved ones a Blessed Christmas and Happy New Year.** May there be new inspiration for the future through the Message and real meaning of Christmas for all. We also wish our Jewish members a happy **Chanukah.**

Dit is moeilik om nou ten tye van hierdie skrywe te besef te dat die Feesgety alreeds baie naby is. Die Januarie uitgawe van WATTS sal waarskynlik eers na Kersfees verskyn. **Die Bestuurspan van PARK wil nou van hierdie geleentheid gebruik maak om u en u geliefdes 'n geseende Kersfees en Gelukkige Nuwe Jaar toe te wens.** Mag daar nuwe inspirasie vir die toekoms deur die Boodskap en ware betekenis van Kersfees vir u almal wees.

Birthdays Verjaarsdae

December



02 Antoinette ZS6D, sw of Danny ZS6AW
06 Sylvia, lv van Tjerk ZS6P
08 Hans ZS6KR
15 Almero ZR6RY
15 Don ZS6AQS
17 Dominic, seun van Hans ZR6HVG
21 Retha, sw of Roy ZS6XN
22 Steven, son of Bill ZS6KO
22 Johan ZR6JO
23 Niel ZR6AUK, son of Roy ZS6MI
25 Chrissy, sw of Dave ZS6JW
28 Allan ZR6AHL, son of Frances ZR6AUT

Desember Anniversaries Herdenkings

01 Elize en Pieter ZR6AHT
10 June and Carl ZS6NCC
11 Petro en Gert ZS6ZB
11 Mariet and Ken ZS6NB
12 Mary and Bill ZS6KO
17 Leanne and Allan ZR6AHL
29 Molly ZR6MOL and Richard ZR6CK
30 Rika, sw of Errol ZR6VDR
31 Henk ZS6CS
31 Jorge ZS6JOR

New Members

Ivan OK1LL and SW Vlasta

Current membership: 110 (67 on e-mail)
Still unpaid: 21 who will not be reading this!

Sick parade



Krukkelys

Calie ZS2CWP is tans weer in die Unitas Hospitaal
Jac ZS6QA gaan skuif na Medstep in Booyesen straat - net om die hoek van Eugene Marais Hospitaal

Diary / Dagboek

Nov 30 Closing date for SARL Council nominations
Dec 04 **Club end-of-year (short) meeting and (long) social:**
Various acknowledgements to deserving Club Members
HF / VHF Constructor's Trophy --- Come and show your home-brew stuff
Desert Island Trophy --- Tell us your yarn !
Raffle? / Refreshments/social
07 Byeenkoms en geselligheid vir alle tydren-betrokkes by PMC, Silverton
05-07 ARRL 160m contest
13-14 ARRL 10m contest
24 SARL Christmas Net (23:45)

Snippets / Brokkies

- **PARC het kommunikasie-bystand gelewer by 10 byeenkomste hierdie jaar.** Kyalami ingesluit, was ons amateurs vir 1 uit elke 3 weke aktief betrokke. (- wel gedaan!)
- **PARC donated R500.00 to the SARL IARU membership fund.**
- **PARC (ZR6CK)** took part in the SARL teleconference on 15 Nov about attracting more people to Amateur Radio, training, and the RAE.
- **PARC** website will soon be managed by Sander ZR6SW (zr6sw@icon.co.za)

Stralingsgevaar Amateur Radio RF stralings is nie die enigste waaraan jou liggaam blootgestel is nie....

Artikel saamgestel uit *Inside Science* Feb 1988 en my Fisika handboek – ZS6KR

In vorige WATTS uitgawes het ons uitgewy oor aanbeveelde ANSI veiligheidsgrense vir **radiostralings op menslike weefsel** en ook so 'n bietjie geleer van wat die son alles op die aarde uitoefen. Laasgenoemde is geklassifiseer as 'n natuurlike bron, maar ons moet ook nie ons eie aarde en alles wat om ons is, vergeet nie. Behalwe mens-gemaakte stralings vanaf beheerde radio-aktiewe bronne soos atoombomme, reaktors vir kragopwekking en selfs die miljoene X-straal prosesse wat hoofsaaklik vir mediese doeleindes nodig is, dra almal by tot ons gemiddelde jaarlikse blootstelling. Tel by die natuurlike prosesse in ons wonings, werksplek, kos wat ons eet en waar ons ook al mag reis.

Radio-aktiwiteit is 'n fundamentele eienskap van ons fisiese wêreld en in 1896 alreeds as sodanig geïdentifiseer. Dit het egter nog 40 jaar geneem om 'n redelik volledige prentjie te vorm van wat dit werklik was en is. Radio-aktiwiteit is die proses waar 'n oorgang plaasvind na 'n meer stabiele toestand van materiaal of stof. Sonder dit sou die son en sterre nie skyn nie, en die bestanddele van ons aarde sou nie gevorm kan word nie. Drie meganismes is moontlik wat elkeen sy unieke tipe straling veroorsaak en 'n effek op menslike weefsel het: Alfa en Beta deeltjies, en Gamma straling. Die drie kan in eenvoudige terme soos volg gedefinieer word:

Alfa: Isotope van swaar metale skei graag 2 protone+2neutrone af om na 'n meer stabiele toestand te transmuteer.

Beta: Isotope met oortollige neutrone gooi elektrone af in hulle transmutasie na protone en neutrinos. Neutrinos het feitlik geen elektriese lading of massa nie. Hulle kan reg deur die aarde gaan sonder om met enige massas te bots en het dus ook geen invloed op biologiese materiaal nie. Elektrone is dus die enigste gestraalde massa.

Gamma: Elektromagnetiese straling met baie kort golflengte en enorme energie. Die straling is 'n neweproduk van beide die Alfa en Beta prosesse.

(Isotope is element vorms met byna dieselfde chemiese eienskappe as die element self, maar met 'n ander aantal neutrone en dus 'n ander massa) Die prosesse kan eintlik afbraakprosesse genoem word omdat massas verloor word. 'n Stof wat so aktief is, sal oor 'n sekere tyd net die helfte van sy straling nog oor hê en dus sy half-lewe bereik. Die afbraak van onstabiele isotope wissel van sekondes tot biljoene jare. (U238 = 4,47 biljoen jaar en is rofweg die geskatte lewe van die aarde) Die lang halflewens van kunsmatig vervaardigde isotope veroorsaak groot probleme met hantering en berging. 'n Reaktor gee bv Neptunium 237 af met 'n halflewe van 2,2 miljoen jaar. Alfa, Beta en Gamma stralings is etlike miljoen electron-volt sterk en oortref by verre die normale elektriese kragte.

Dit is die radio-aktiewe stowwe wat potensieel skadelik is vir biologiese stelsels. Al drie gemelde stralings dra energie oor wat oorgedra word na die massa wat gepenetreer word. **Hoofsaaklik vind ionisasie plaas en gevolglike selbeskadiging dmv molekulêre veranderings en chemiese reaksies wat lei tot vernietiging of verandering van funksie. Skade aan genetiese materiaal in 'n sel kan kanker veroorsaak en oorerflike siektes.**

Interessant genoeg is dit die vinnigste deeltjies wat die minste skade veroorsaak per afstand. Alfa deeltjies is meer in aantal en gesamentlik swaarder en veroorsaak 4x meer ionisering binne 'n korter penetrasie. Skade is dus meer gekonsentreerd. 'n Laag dooie vel of 'n vel papier is egter genoeg om hulle te stop maar hulle kan ook direk in die liggaam inkom deur inaseming en kos inname. Gamma en X-strale het geen massa nie maar kan ook ionisasie veroorsaak en net soveel skade aanrig.

Hedendaagse eenhede

Gray : (Gy) = 1 joule energie oorgedra in 1kg stof (geabsorbeerde dosis oftewel aanduiding van slaankrag)

Sievert : (Sv) = geabsorbeerde dosis met aanpassing vir tipe straling. (x1 vir Beta, x20 vir Alfa)

Betekenis

1-5 Gy : Redelik veilig maar kan lei tot 'n vroeë dood

8 Gy : Onherstelbare skade aan beenmurg wat die immuunstelsel vernietig en lei tot dood binne 2 maande.

10-12 Gy : Skade aan ingewande wat lei tot dood binne 2-3 dae.

Normale jaarlikse blootstelling (gemeet in Brittanje)

1,88 mSv vanaf natuurlike bronne, plus:

0,26 mSv vanaf mens-vervaardigde bronne

Die grootste bydrae is van die isotope van die gas Radon en sy afbraakprodukte. Die gas se isotope kom van die transformasies van baie klein hoeveelhede Uranium en Thorium in rotse, grond en boumateriaal. Dit stel ons sensitiewe bronchiale weefsels bloot aan baie Alfa partikels soos ons die produkte inasem. Ander komponente is:

Kosmies : 0,30 mSv per jaar (x3 op 3000m hoogte)

X-strale : 0,22 mSv

Chernobyl : 0,03 mSv (1986)

Ander : 0,01 mSv (horlosiewysers, TV stelle, lugreise)

Teen al hierdie angsaanjaende feite is nie veel te doen nie; en een van die faktore dat die meeste van ons 'n ryp ouderdom kan bereik is moontlik die fyn balans tussen sel-vernietiging en herstelwerk in ons liggame.

Ground wave propagation : any use to hams?

Most data below extracted from a series of 'Refresher Topics' in R&S publications

Ground waves can efficiently be launched from vertically polarized antennas mounted close to or on actual ground. With a theoretical image below ground, we can imagine it as a vertical dipole radiating broadside around itself though in reality the energy distributes itself as shown.

The field strength at a distance from a point source is approx:

$$E = \frac{\sqrt{30 P_s(\text{kW})}}{d(\text{m})} \quad \text{V/m}$$

$$= \frac{300 \sqrt{P_s(\text{kW})}}{d(\text{km})} \quad \text{mV/m}$$

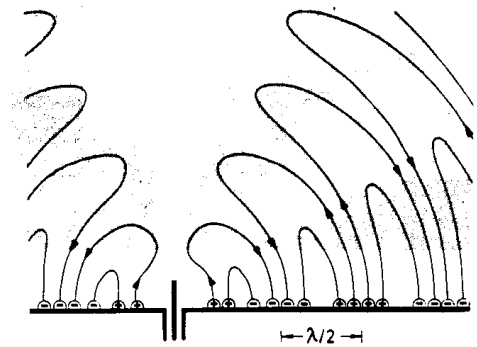


FIG 22 Field pattern of ground waves under ideal conditions.

This is the same as for free-space propagation provided there is an ideally conducting surface. This rule-of-thumb increases only by about 5% for a quarter-wave antenna and can thus be maintained as truth.

Values obtained with this inverse distance law are thus maximum (limit) values that can be degraded by poor conductivity and losses in the subsurface that is actually present. This path is usually non-homogeneous due to irregularities in the terrain and the varying composition and water content of the subsurface.

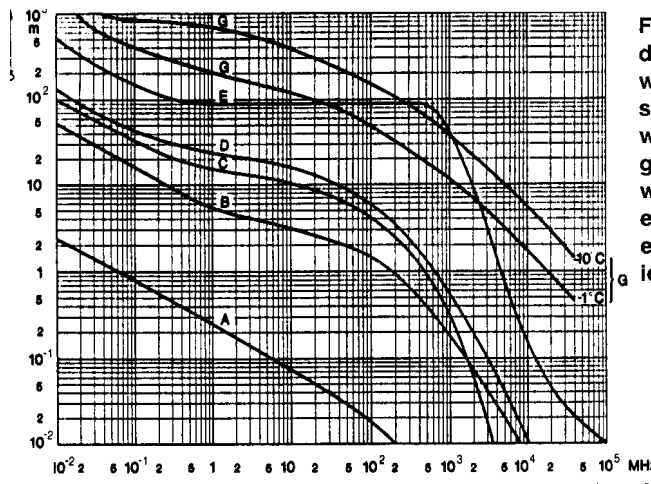


FIG 31 Penetration depth δ of ground waves into differing subsurfaces (A sea water, B moist ground, C fresh water, D average dry earth, E very dry earth, G fresh-water ice).

The inverse-distance law is near-accurate with

- highly conductive subsurfaces such as sea water
- at very low frequencies
- at relatively short distances

Calculation of ground-wave field strength is time consuming with real ground surfaces. Practical evaluation is therefore usually carried out by the use of the limit graphs given in CCIR report 368(5). These are shown here as figs 25 and 26 opposite.

The inverse-distance law is plotted as a dotted line and in both cases the lowest frequency and shortest distance for a particular frequency follow this law closely. Losses are much less over sea water than well-conducting pastoral land where the larger spacing of the field strength curves indicates that the choice of frequency over land must generally be less than 5MHz as attenuation is already -73dB at 50km improving to -50dB at 1,5MHz.

This is made worse during night conditions when atmospheric noise increases at the lower frequencies and, with the general use of practical electrically short antennas, there can be transformation losses in the required antenna tuning units. Additionally, non-homogeneous land and land-sea transitions add further losses.

It is without doubt that with the correct considerations, essential communications services can be maintained over moderate distances where sky-wave conditions are either unreliable or impossible. Another interesting aspect is that due to the lower part of the wavefront losing energy due to currents induced in the ground, the lower part of the wave is slowed sufficiently to cause a forward tilt. This tilting follows the curvature of the earth, allowing low- and medium wave radio signals to propagate well beyond the line-of-sight.

As far Amateur Radio operators are concerned, the distances between stations are generally such that only the sky-wave component of the energy emitted by a vertically polarized antenna is involved. Even at 7Mhz it is doubtful that much of a received signal at distances greater than 50km has any ground wave component though on the 160m band 200km may be feasible.

Antenna system design is not affected by what has been said here; one still goes for the lowest take-off angle when DX is your preference and a higher angle if your sky wave has to be reflected and cover the local scene for domestic QSO's. Horizontal polarization has virtually no ground wave component and little zero-angle radiation if too close to real ground although sometimes preferred due to its better immunity to mainly vertically polarized man-made noise if also used as a receiving antenna.

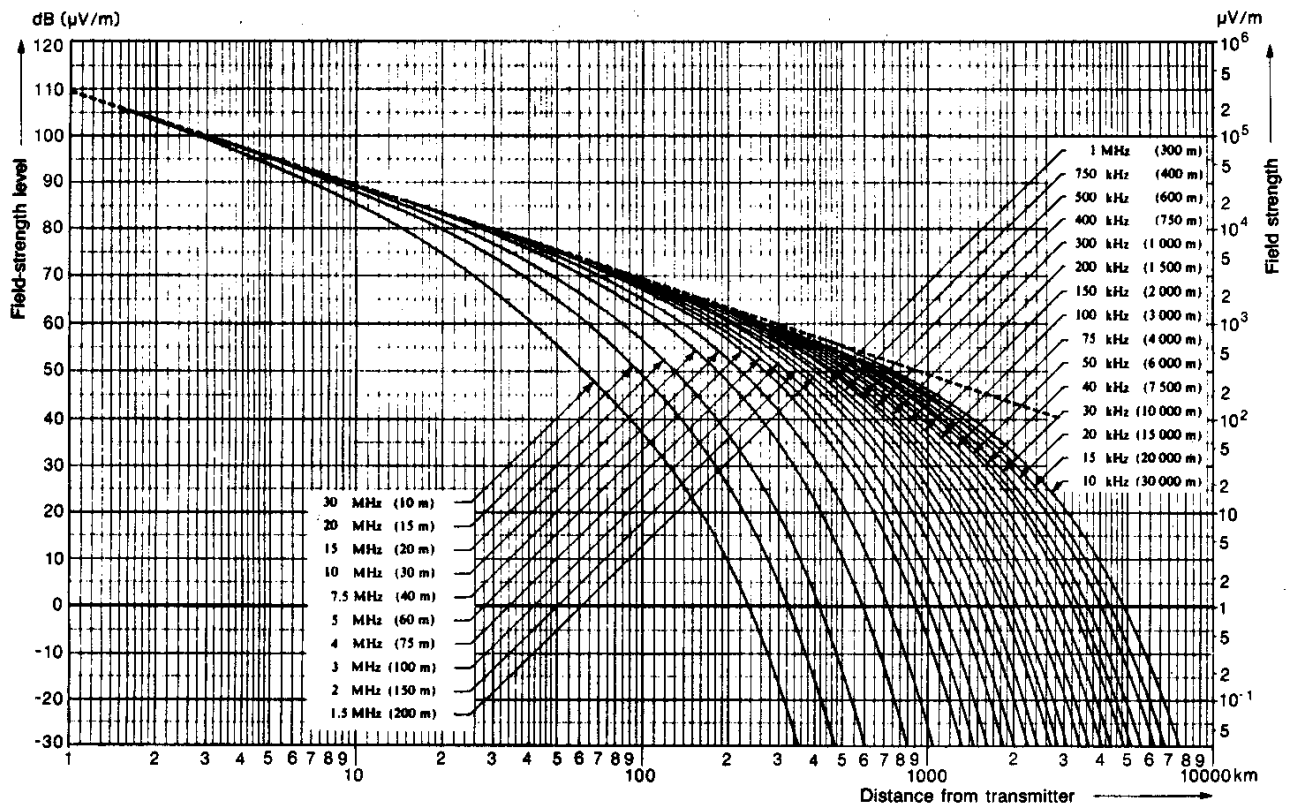


FIG 25 Ground-wave propagation curves over sea water (input power 1 kW into electrically short, lossless vertical antenna).

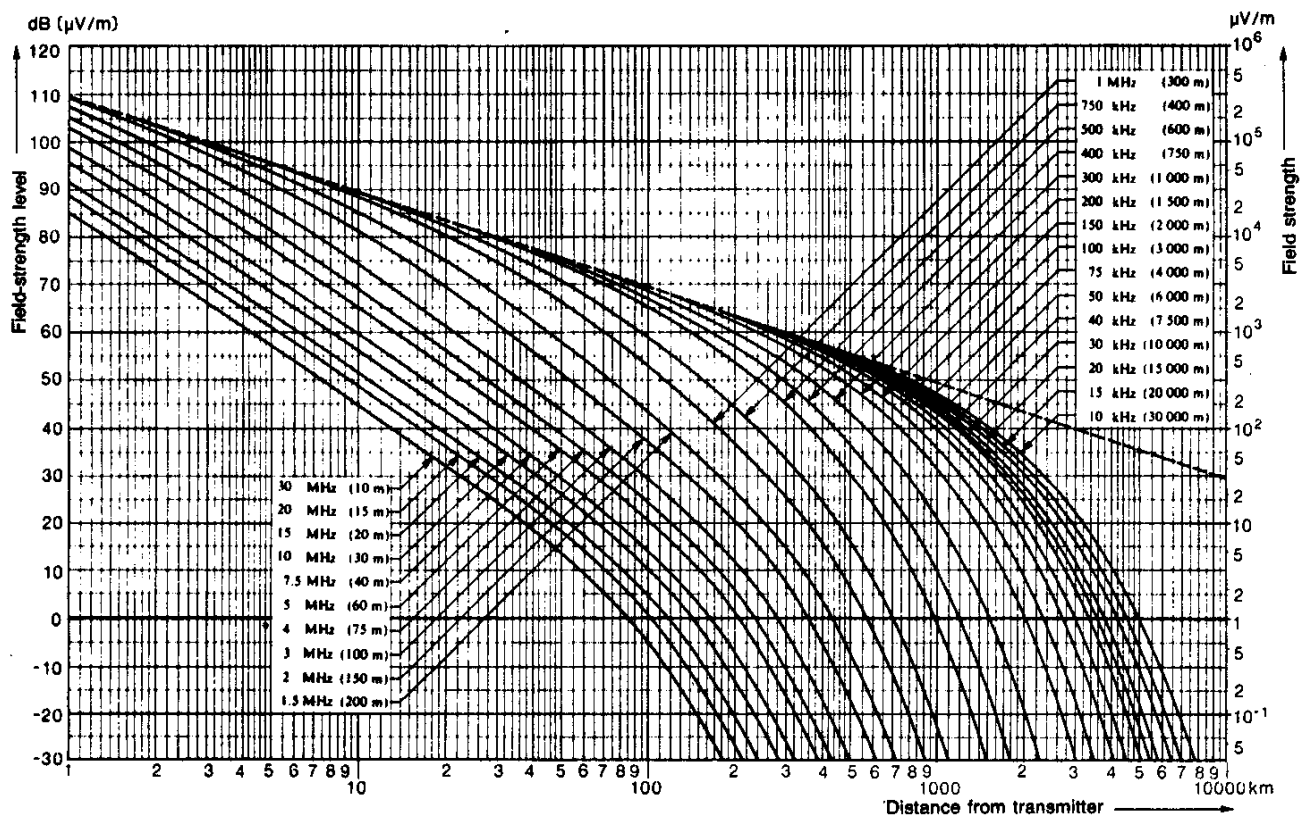


FIG 26 Ground-wave propagation curves over land (well conducting pastoral ground). Data as in FIG 25.

German Quad forerunner?

Is this a foxhunt?



Swapshop 1940 style..

HAVE—A U T O M A T I C R I F L E, piano accordion, radio course, books, taxi-derry course, amateur equipment. Want good amateur communications receiver, transmitter, or what am I offered? James Smith, Box 612, Spindale, N. C.

SWAP IN NEW YORK OR VICINITY: Tobe Browning 35H amateur superhet. chassis, 12" dynamic speaker for old Sky Chief, Sargent model 10 M.A., similar set with b.c. bands. Set can be seen. Write to T. Marks, 109-19-96th St., Ozone Park, L. I., N. Y.

WILL TRADE FOR RIDERS MANUALS, Volt-Ohm-Meter, 80-meter crystal and transmitter parts. State your wants. Chester Park, Mountain View, Mo.

HAVE ANCIENT RECEIVER SUITABLE for museum piece. Also tube tester, printing press. Need public address amplifier, condenser checker, 80 meter crystal, communications receiver, microphone, or? O. Link, High Bridge, Wisc.

WANT NATIONAL 80X RECEIVER with speaker. Have Lafayette 4-Band Super.. Service Manuals, test equipment, motors and typewriters. Will trade or buy. Dewey Temple, Rochelle, Louisiana.

WANT UNCANCELLED HONG KONG Walter Z. Scott stamp. Name what you require new radio parts. W. R. Carroll, 3057 E. 95 St., Seattle, Wash.

WANTED: AMATEUR RECEIVER. Have: five year old Briggs & Stratton engine, Ce-2 photo cell, A.C.-D.C. hookup and relay; three year old 6V 7-tube, 3 band radio. Gilferd Baker, San Jose, Ill.

HAVE: WURLITZER NICKEL AUTOMATIC phonograph, good condition; Weston tube tester with charts and adapters, perfect; P.A. System; 60 watt speakers; crystal mike; amplifiers; all kinds parts; Neon transformers; radios. Want Genemotor, or? Steiert, P.O. Box 423, Hartford, Conn.

HAVE: CROSLLEY READO FACSIMILE Printer, 2-tube Knight Phono Oscillator, and cash. Want: Communication receiver, printing press, or Home Movie equipment. Describe fully. R. L. Hawks, 303 Joplin St., Joplin, Mo.

Stop press

Last but not least – die geselligheid by ZS6P QTH

(dit het nie gereën nie)

7 couples and 2 singles enjoyed a beautiful evening and lovely braai at Buckingham Horse Creek.



PS: The Editor and SW are flying off to ZS1 for a short holiday – bye bye – be back 29 November