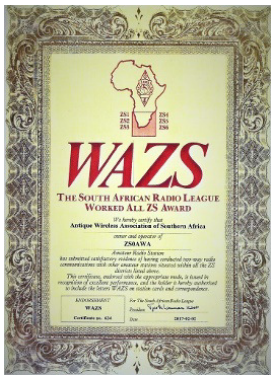
Newsletter

The Antique Wireless Association of Southern Africa

 # 166 **May 2020**



Inside this issue:

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* Technical Advisor—Rad ZS6RAD
* Secretary/PRO—Andy ZS6ADY
* KZN—Don ZS5DR
* WC—John ZS1WJ
* Historian—Oliver ZS6OG

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Reflections:

I have often wondered what it is the drives many of us in different directions when it comes to amateur radio.

When one looks at it, there are so many different aspects of the hobby that it actually boggles the mind.

I don't think that here in South Africa (and I may very well be wrong as I so often am) that we have the fullness of amateur radio represented here.

Yes we have people involved in the building of cubesats and many highly intelligent people involved around the design and implementation of these amazing pieces, and many involved in writing software and designing programmes that are used in amateur radio, but there is so much more to it.

Of course the limits to our involvement in this wonderful hobby are endless. But yet somehow there always seems to be an attraction to certain parts of the hobby that go back to the beginning of it all. Its not always the most modern that attract people.

I have heard many complain about using modes like FT8 and digital, but yet there are those who get great enjoyment out of it. People with high noise levels in their immediate environment still manage to use digital comms very effectively.

But then, when last have you heard of anyone using RTTY or PSK ? I know there are still many in the US and Europe that are very actively involved in both these modes.

When last did you hear of anyone using SSTV? now there's one for the archives.

But yet they have all had their turn at being all the rage when it came to operating them.

WSPR, JT8 and FT8 seem to be the top of the charts these days, but were you aware that you can use all of these modes using old equipment. It is a bit of a challenge, especially when you have something that the Tx and Rx frequencies are slightly out. But I have found that if you have something with an external VFO, you can do anything.

I don't have any modern equipment, but yet I have tried all of these modes and used them quite successfully.

Don't let yourself get stuck in the bored when it comes to amateur radio. This may be the reason why so many get to the stage where the radios get put in cupboards, or even worse, sold, when there is just so much more to do with them.

In a way this whole lockdown thing may have just brought out the experimenter in many people and they are finding new ways to use the equipment they have.

Don't be radio shy, get out there and enjoy yourself. Besides, it will keep you out of the wife's way.

Best 73

DE Andy ZS6ADY

Wikipedia

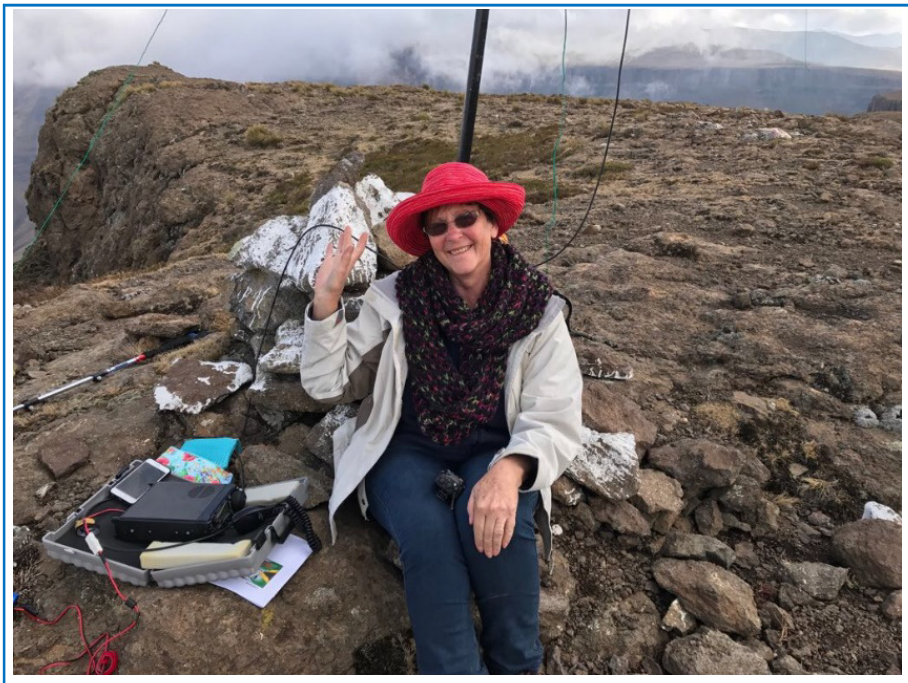
Radio Propagation:

Moon Bounce (Earth-Moon-Earth)

Amateurs do successfully communicate by bouncing their signals off the surface of the moon, called Earth -Moon-Earth (EME) transmission.

The mode requires moderately high power (more than 500 Watts) and a fairly large, high-gain antenna because round-trip path loss is on the order of 270 dB for 70 cm signals. Return signals are weak and distorted because of the relative velocities of the transmitting station, moon and the receiving station. The moon's surface is also very rocky and irregular.

Because of the weak, distorted return signals, Moon bounce communications use digital modes. For example, old-fashioned Morse code or modern JT65, designed for working with weak signals.



"Climb every mountain…" Adele, ZS5APT somewhere on a summit for SOTA

Worcester - ZS200W

ZS200W celebrates the 200th Anniversary of the establishment of Worcester in the Western Cape on 28 February 1820. QSL to ZS1HF.
(*No luck yet on the 200th anniversary of the 1820 Settlers!*)

Calendar:

April
2 - World Autism Awareness Day; SARL 80 m QSO Party
3 and 4 - SARL National Convention
4 - RaDAR Challenge
5 - Palm Sunday
6 - Arrival of Jan van Riebeeck in the Cape - 1652
7 - World Health Day
10 - Good Friday
12 - Easter Sunday; International Day for Human Space Flight
13 - Family Day
16 – 23:59 CAT Lock down lifted (we hope)
18 - World Amateur Radio Day; Autumn QRP Sprint; ZS4SRK Balloon Contest
19 – ZS4 Sprint
21 - Lyrids meteor shower; Highway ARC meeting
22 - Lyrids meteor shower
25 - Ramadan; CTARC meeting; SARL 95 40 m Club Sprint
27 – Freedom Day

ZS SOTA Activity Day 1 May 2020 - PLAN B!

Due to the Level 4 restrictions for that virus, not being able to travel, our planned ZS SOTA Activity Day had to be shelved. Dave Higgs, ZS2DH has proposed the Backyard SOTA fun day on 1 May 2020, which is the public holiday call the Jobless Workers Day and we hope the weather plays with. Let us take an idea from the New Zealand radio amateurs (see page 71 of the May Radio ZS.)

Backyard Summits on The Air/ Backyard Parks on The Air

Both SOTA and POTA are about getting out and playing radio – why should a little lockdown prevent us from having fun? To take part in the Backyard SOTA activity, simply locate the highest point in your back yard – feasible enough to operate a field station and you can activate your own backyard summit! Alternatively, if you have Acrophobia (yes, scared of heights!), perhaps Backyard Parks on the Air would be more suitable. Find a spot in the backyard that can pass off as a field station in a national park (Lions and other wildlife an optional extra).
You do not need to apply for a summit/park registration number – just make your own up and use it as you would like. Park fees are also waivered for this activity!
To be an activator, you need to operate a field station as per the rules below. To be a chaser, you can operate ICOS (**I**n the **C**omfort **O**f your **S**hack)! The real challenge is to get Summit-To-Summit, Park-To-Park and Summit-To-Park contacts which can only be done as an activator.

Rules

Operate independent of mains power.

- Use no permanent structure to hold or support your station.
- Everything must be carried to the summit/park – a distance of at least 5 m! (*The RaDAR aspect covered!*)
- Spotting, collaborating and arranging skeds is encouraged.
- The exchange is your RS or RST report and your summit/park code. You are also free to discuss the weather and other topics of general interest.
- Any legal mode, band or power level is allowed *
- The activity runs from 00:00 to 23:59 and as such you can choose when you would like to operate and there is

no limitation on the length of time you operate.
• You can publish your activity on the SOTA/POTA Whatsapp group, or on Sarah.org.za, **but please DO NOT put it on the official SOTA Watch website, forum, or reflector**.*
• Open to all radio amateurs – both SARL members and not-yet-SARL members.
• It is a condition of entry that you have fun.
** Please be mindful of the fact that on certain bands at certain parts of the day you may get DX chasers who would reasonably assume you are doing a valid SOTA/POTA activity. Please be sure to explain that this is NOT valid SOTA/POTA activations and that the logs will not count for points.*
If you would like to be added to the SOTA/POTA WhatsApp group, please send your contact details to Sid Tyler, ZS5AYC on mobile 082 4613279.

Notes

Please have FUN with this activity – take pictures and post them on the WhatsApp group. Show your summit station or perhaps your park station with some wildlife in the picture (raid the kids or grandkids toy box or get the kids to act as wild aminals!)
This is not a contest, but an activity designed to promote SOTA and POTA. As such, you do not need to submit your log, however, if you submit your log to Dave Higgs at om@zs2dh.co.za
You will also have a story for the grandchildren one day!
You are free to list your activity on sarah.org.za – and even use the live logging feature (or log it manually after the event). Start earning activator and chaser points right away!
For any assistance using Sarah – please ask Dave Higgs, ZS2DH – his details are on the Sarah website. For any further information, please contact Sid Tyler, ZS5AYC on mobile 082 461 3279 and/or e-mail zs5ayc@gmail.com or Sid at
zs5ayc@gmail.com along with a photo of your operation, you will get a certificate of participation.

Bored with "Stay at Home" orders?

Although we are missing DXpeditions, there is a tremendous amount of activity on the bands as every country in the world seems to have stay at home orders. With no expeditions, some may be experiencing a lack of motivation to get on the air. We have the answer! CQ's annual DX Marathon! Each year amateurs are invited to work as many countries and CQ zones as possible. So far this year over 255 CQ countries have been active plus all 40 zones. That is a lot of DX chasing to keep everyone busy! There are plenty of certificates and even plaques for the top scores each year, but many amateurs simply compete against themselves to improve their totals each year. This is a wonderful time to participate in the DX Marathon and see how many countries and zones you can work this year! Complete details on the DX Marathon are available on the DX Marathon website www.dxmarathon.com. Come and join the fun!

2020 SARL Hamnet 40 M Simulated Emergency Contest

The SARL Hamnet 40 m Simulated Emergency Contest was held on Sunday 1 March, while the SARL Hamnet Regional Directors were having the first face-to-face meeting in quite some time meeting at the National Amateur Radio Centre. Logs were received from ZS1, ZS2, ZS4 and ZS6, while contacts in the logs indicate QSOs from all over the country. Unfortunately, due to the lockdown most entries were in Category D (Single operator Base station)

Overall Winners

1st Jan Botha, ZS4JAN – D – 1 548 points
2nd Nico Oelofse, ZS4N – A – 1 152 points
3rd the Port Elizabeth Amateur Radio Society, ZS2PE – D – 948 points
4th Denise van Vuuren, ZS1DS – D – 756 points
5th Charles le Roux, ZS1CF – D – 612 points
6th Johan van Zijl, ZS4DZ - D – 594 points
7th SARL Hamnet Western Cape, ZS1DCC - C – 432 points
8th Geoff Levey, ZS6C – D – 340 points
9th the SARL, ZS6DCC - C - 310 points
10th Anthony Rouquette, ZS6ANT – D – 288 points
11th Al Akkers, ZS2U – B – 260 points

12th Phillip van Tonder, ZS6PVT – A – 252 points
13th Worcester 200th Anniversary, ZS200W – D – 120 points
Category A: Single Operator stationary mobile
1st Nico Oelofse, ZS4N – 1 152 points
2nd Phillip van Tonder, ZS6PVT – 252 points
Category B: Single Operator portable
1st Al Akkers, ZS2U – 260 points
Category C: Multi-operator portable
1st SARL Hamnet Western Cape, ZS1DCC – 432 points
2nd the SARL, ZS6DCC – 310 points (log submitted by Channette Coetzee, ZS6CAC)

Category D: Single operator base station
1st Jan Botha, ZS4JAN – 1 548 points
2nd the Port Elizabeth Amateur Radio Society, ZS2PE – 948 points
3rd Denise van Vuuren, ZS1DS – 756 points
4th Charles le Roux, ZS1CF – 612 points
5th Johan van Zijl, ZS4DZ – 594 points
6th Geoff Levey, ZS6C – 340 points
7th Anthony Rouquette, ZS6ANT – 288 points
8th Worcester 200th Anniversary, ZS200W – 120 points (operated by Pierre Trump, ZS1HF)

The 2020 the SARL 80 m QSO Party
The Contest Committee received 23 logs (they were surprised!) for the first leg of the SARL 80 m QSO Party held on Thursday 2 April 2020. It was determined that 123 amateurs were active in the contest.
1st Jan Botha, ZS4JAN - 925 points
2nd Schalk van Vuuren, ZS1LL - 760 points
3rd Helmar Otto, ZS1H - 605 points
4th Christi Grobbelaar, ZS4CGR - 550 points
5th Kobus Boshoff, ZS6BOS - 510 points
6th Jadranko Davidovic, ZS6DJA - 490 points
7th Woody Collett, ZS3WL - 460 points

Japan: Expanded Access to 160 And 80 Metres
As of 21 April, Japanese amateurs have gained new privileges on 160 and 80 m. The current band plan, as summarized on the ARRL's website, is as follow:
160 Metres
1 800 - 1 810 kHz All modes (new assignment)
1 810 - 1 825 kHz CW only
1 825 - 1 875 kHz All modes (as secondary service, new assignment)
1907.5 - 1912.5 kHz CW and data (F1B, F1D, G1B, G1D)
80 Metres
3 500 - 3 520 kHz CW only
3 520 - 3 53 5 kHz CW and data (F1B, F1D, G1B, G1D) 3 53 5 - 3 575 kHz CW, phone, image; data only permitted for making contacts with non-JA amateurs
3 575 - 3 580 kHz All modes (as secondary service, new assignment)
3 599 - 3 612 kHz CW, phone, image, data
3 662 - 3 680 kHz All modes (as secondary service, new assignment)
3 680 - 3 687 kHz CW, phone, image
3 702 - 3 716 kHz CW, phone, image
3 745 - 3 770 kHz CW, phone, image
3 791 - 3 805 kHz CW, phone, image
"The small break is a still problem, but overall, it's an improvement. In particular, a small RTTY-window was born at 3 575 - 3 580 kHz... 73, Hisami 7L4IOU"

Antique Wireless Association Valve QSO Party

1. Aim
The aim of the AWA Valve QSO party is to create activity on the 40 and 80 metre bands. It is a phone only contest using AM and SSB. Preferably, valve radios or radios with valves in them may be used. No linear amplifiers may be used.

2. Date and Time
2.1 AM QSO Party
13:00 to 17:00 UTC Saturday 2 May and

2.2 SSB QSO Party
13:00 to 17:00 UTC Sunday 3 May and

3. Frequencies
3.1 40 metres: 7 063 to 7 100 kHz and 7 130 to 7 200 kHz
3.2 80 metres: 3 603 to 3 650 kHz

4. Power
The output power may not exceed 100 w, unless the rig itself has a higher output power (FTDX400, etc.)

5. Exchange
Call sign, RS report, a consecutive serial numbers starting at 001 and the type of radio used, e.g. HT37 TX.

6. Scoring (Your radio)
All valve radio: 3 points per contact Hybrid radio: 2 points per contact Solid State Radio: 1 point per contact

7. Log Sheets
The log sheets must be submitted by Monday 18 May 2020 and Monday 19 October 2020 to andyzs6ady@vodamail.co.za. Certificates will be awarded to the first three places in each category AM and SSB.

Hybrid

All Valve

Solid State

Lightning Protection for the Amateur Radio Station

Part 3—In this final installment, the author shows how to develop a good external ground system

Establishing a Good Ground

Now that the SPGP (Single-Point Ground Panel) is connected through the wall to the outside world, there is still a lot of work to do. It's necessary to switch from brainpower and the challenge of getting copper strap through walls to the brute force required to establish a good ground system. The operative word here is *system*—not a ground rod, but a network of interconnected ground rods.

The primary purpose of the external ground system is to disperse as much of the lightning energy as possible into the earth before it follows the feed line into the radio station. No matter how hard one tries, some of it will follow the coax, which is why you created the protection plan for the radio equipment. The easier you make it for the strike energy to dissipate in the earth before it gets to the radio station, the less your equipment protection plan will be stressed. With great diligence, hard work, no real estate restrictions, plenty of funds and highly conductive soil, it is possible for up to 90% of the strike energy to be dissipated in the earth, leaving just 10% heading for your equipment. This would be quite an accomplishment. In many commercial sites it doesn't work out that well and rarely, if ever, for the Amateur Radio station— there are always restrictions. Let's see what should be done and then adjust to the home environment's restrictions.

Figure 13 shows what has to be done. In the center, the concentric triangles represent the tower. Ideally, the tower is separated from the house by 20 to 50 feet. This distance provides sufficient room for the dissipation of the magnetic fields during the strike event. This distance also takes advantage of the natural inductance of the antenna feed lines to limit the amount of surge and allow more time for the tower grounding system to absorb the strike energy.

Radials and Ground Rods

Spreading out from the base of the tower is a set of eight radials. While the number of radials required for a particular installation will be dependent on the soil conditions in your location, the system shown here is a reasonable start. Each radial is a bare copper wire (preferably, strap) buried 6 to 18 inches below grade. The radials should be positioned so that the energy is dissipated away from the house. Connected to the radials are ground rods. The ground rods are spaced approximately twice the length of a ground rod.

For an 8-foot rod, the spacing would be 16 feet. During the strike, each ground rod has a cylindrically shaped region of influence centered on the ground rod. This is the region in which the ground rod disperses the strike energy. If the rods are placed closer, the regions of influence begin to overlap and the ground rod's ability to disperse energy is diminished.

Although this overlapping does not harm the ground system, it does increase the cost since more rods are used.

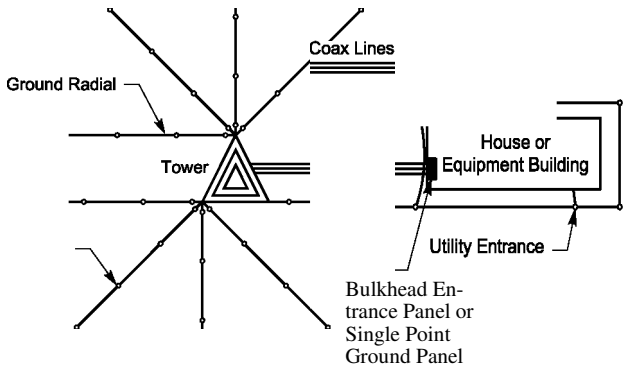


Figure 13-Aerial view of tower and equipment building showing recommended ground radials and perimeter ground. Tower and Ground Radials drawing, The "Grounds" for Lightning and EMP Protection, Roger R. Block, PolyPhaser Corporation, Minden, Nevada.

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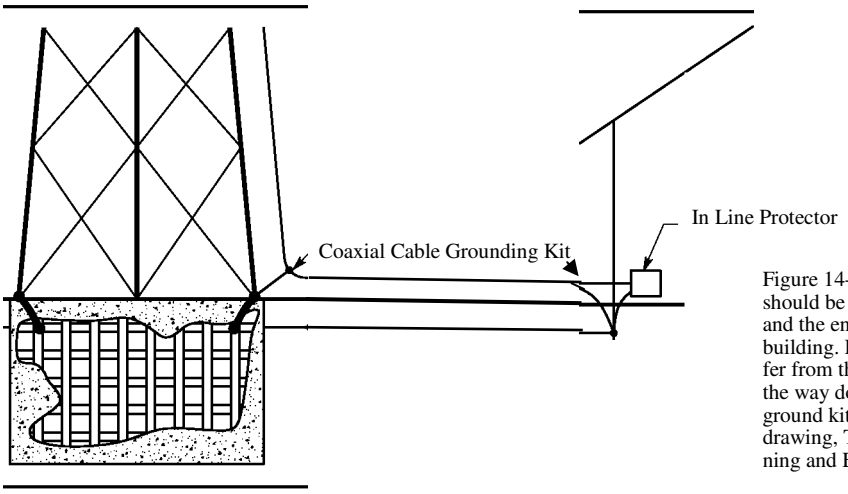

Figure 14-Grounding coaxial cables should be done at both the tower base and the entry point to the house or building. For minimum energy transfer from the tower, bring the coax all the way down the tower and apply a ground kit. Coax Take-off Point drawing, The "Grounds" for Lightning and EMP Protection,

Roger R. Block, PolyPhaser Corporation, Minden, Nevada.

Ideally, the connection between a radial and its ground rod should be made using an exothermic bonding process. This connection will most likely outlast the life expectancy of the ground system and you won't have to do annual inspections. A number of manufacturers supply the molds and fusing material for a variety of cable/strap and ground rod sizes. Two of them are Erico Incorporated (www.erico.com) and Alltec Corporation (www.allteccorp.com). If the exothermic process is not used, mechanical clamps that can be used to connect the radial to the ground rod are available. All mechanical connections must be inspected annually or more frequently to ensure the integrity of the system.

Ground rods must be mechanically driven into the ground.

This is the only way to ensure that the rod achieves a reasonable "connection" to the earth. Drilling a hole and then backfilling the space around the rod is not acceptable.

While a very long radial/ground rod system is good, electrical and economic considerations come into play. Analysing the average cost of installing an additional foot of the grounding system versus the benefit of a lower impedance system, the break-even point is somewhere around 80 feet. For practical purposes in areas with reasonably conductive soil, the maximum length of a radial should be limited to approximately 80 feet. If the impedance of the ground system needs to be lower, additional radials should be used as opposed to longer radials.

Some caution must be exercised when laying out the radials. If a radial comes within 4 feet of a metal object, it must be bonded to the metal object. The 4-foot rule applies to objects that are above, below, to the left or to the right of the radial. This includes metal fence posts, kids' swing sets, buried fuel tanks, and so on. Be sure to watch out for dissimilar metal properties when bonding to these objects.

Care must be exercised when connecting the radials to the tower. Most towers are zinc-coated steel (galvanized). Connecting a copper wire or strap directly to the tower leg will cause the zinc to erode, allowing the base steel to oxidize (rust). This in turn will increase the resistance of the connection and over time may threaten the mechanical strength of the tower segment. One solution to this problem is to use a buffer layer of stainless steel between the zinc and the copper. Several manufacturers offer tower leg clamps.

If you are constructing a new tower you can use the tower base as a "ground rod." Called a Ufer ground, it utilizes the rebar that reinforces the concrete base as an excellent ground connection. The rebar itself must be electrically interconnected so there are no spark gaps and there must be at least 4 inches of concrete between the rebar and the surrounding earth. If this is done, a wire can be brought out from the rebar and attached to the tower leg. A great big ground rod! No, you will not blow up your concrete-the other radials with ground rods will handle most of the strike energy. Since you must put rebar in the concrete anyway, use it to augment your ground system.

There are two more items that need to be highlighted in Figure 13. The first is that the SPGP (or bulkhead entrance panel) is connected to the tower ground radial system. This connection should use the same material and ground rods as is used for the radials via a buried path. If the distance between the tower and the SPGP ground point is more than approximately 100 feet, however, it may not be cost effective to interconnect the tower ground system with the SPGP ground system. In this case some portion of the tower ground system must be duplicated for the SPGP ground system.

The second item is the perimeter ground, shown in Figure 13 as going completely around the house or equipment building.

This perimeter ground serves two purposes: first, it helps conduct the surge energy around the house, minimizing the ground potential differences under the house during the strike event; and second, it enhances the basic ground system by providing more connection points to the earth. The existing utility ground is also connected to the perimeter ground-this is a must !

Some Specifics :

That's how it should be done; here are some general guidelines for adapting this to your specific situation.

• In general, doubling the number of radials lowers the impedance of the ground system by one half.

• Radials don't have to go in a straight line; they can follow the contour of your property or flow around obstacles. Make turns gradually (l2-inch radius or larger).

• A perimeter ground that only goes three-quarters or halfway around the house is better than no perimeter ground at all. Although flowerbeds, walkways and driveways frequently present insurmountable obstacles, do your best to get most of the way around. The perimeter ground must at least connect to the utility ground .

• Short ground rods are better than none at all. Just place them closer together spaced at twice their length.

• Soil doping can improve soil conductivity. Be aware that some additives may cause ground and water pollution and can shorten the life of the grounding materials.

• Where possible when installing a new tower, place it at least 25 feet from the house; 30 feet is even better. By placing the tower at some distance from the house, you minimize the amount of magnetic energy that will couple from it into the wiring of the house. In addition, you take advantage of the inductance of the coax line in limiting the surge energy headed toward your equipment. Don't get too carried away with the distance; the added feed line also attenuates your signals .

• If you are fortunate enough to have multiple towers, each should have its own ground system of radials and ground rods. If the towers are within 100 feet of each other, a radial should be used to interconnect the towers.

Coaxial Cable Grounding :

Each coaxial cable traversing your tower needs to be properly grounded to the tower. The first point is at the top of the tower where the coax connects to the antenna. The second point is where the coax leaves the tower to go to the radio equipment. This take-off point should be as close to the base of the tower as physically possible. The third point, for towers taller than 150 feet, is every 75 feet down the tower as measured from the top.

Depending on the height of the tower (inductance) and the severity of the lightning strike (current), the tower could easily have an instantaneous voltage difference between the top and the ground that exceeds 100 k V, In simplified terms, if the tower is viewed as if it were a very long resistor with one end connected to ground and the coax take-off point as a tap point on that resistor, you can begin to appreciate the problem associated with allowing the coax to leave the tower at any point above the bottom. For a 100-foot tower with a coax take-off point at the lO-foot level, approximately 10% of the tower energy (10 kV in this example) will follow the coax to your equipment. If you lower the connection to the 1 or 2- foot level, the energy flow will be correspondingly lower.

The grounding of the coax to the tower should be accomplished using a commercial-type grounding kit followed by the application of a commercial grade waterproofing material. Be careful of dissimilar metals when connecting the grounding kit pigtail to the tower.

In addition, another grounding kit should be applied to the coax just before it enters the house. This will remove some additional energy from the shield of the coax and further minimize the stress placed on your protection system. See Figure 14.

Special Considerations :

Numerous Amateur Radio stations will be in locations that make it impractical or impossible to follow some or all of the advice given so far in this article. For those stations there are some things that you can do to achieve a reasonable level of protection for your equipment.

First, establish an SPGP for your equipment by creating a box-level schematic of your radio station. Identify and procure the appropriate protectors for all of the I/O connections to the radio station. Mount them on a common conductive surface. Where your installation varies from the ideal may be that the SPGP cannot be connected to an external ground.

As a substitute for an external ground, locate an alternative conductive path. Here are some recommendations for potential sources. These are in the order of most to least desirable.

• Building steel

• Stand pipe

• Metal cold water pipe

• Metal building skin

• Electrical system safety ground

Even though many of these ground choices are highly inductive and will not function as a good RF ground, the goal is to survive a lightning strike event by ensuring no current flows on the radio equipment I/O connectors. This is achieved through SPGP grounding techniques, which maintain an equal potential between equipment chassis during the strike independently of how the SPGP is grounded. For small upper-floor radio stations, this will work just fine.

Operating Safety :

No matter how good your installed lightning protection plan is, you cannot be in electrical contact with the radio equipment during a lightning strike event. Although there is no current flowing between the radios in your radio room, all of the equipment will be statically elevated above ground. If you are holding onto the microphone or the key during the strike event, you are now the path of least impedance to ground from the protected and now elevated equipment chassis. This ground path can be to the rebar in the concrete floor below your feet or to a nearby electrical wire or water pipe.

Consider getting a storm warning device capable of sounding a warning when lightning activity is within 10 miles of your radio station. (Lightning detectors are available commercially, or you can build one; see Radmore, "A Lightning Detector for the Shack," Apr 2002 QST, pp 59-61.) When the alarm sounds, leave the radio room. If your protection plan is installed correctly, you may leave the equipment connected and poweredon-but you must leave the room. Commercial radio operators get away with operating during lightning strikes because most of their equipment is remotely operated-just like a repeater.

More Information :

After you have implemented the guidelines presented here and if you have questions (recognizing that every site is unique) feel free to contact me. Be aware, the first thing that I will ask you to share with me is your box-level schematic and some physical characteristics of your radio room and antenna farm. With this information as a reference, we can discuss your situation. Please forward a copy of the appropriate information before contacting me. Some additional information is also available on the WR Block & Associates Web site at www.wrblock.com.

Thanks :

Many thanks go to Roger R. Block, my brother and founder of PolyPhaser Corporation, for his input in the preparation of this article.

Ron Block, KB2UYT, has been a PolyPhaser distributor and consultant since 1989 and has completed The Lightning Protection Course by PolyPhaser. He is the chairman of the Amateur Radio Station Grounding forum at the Dayton Hamvention and has been a guest speaker at various Amateur Radio club meetings. The author's brother, Roger, founder of PolyPhaser, reviewed this article for technical accuracy.

References :

Block, R. R., The "Grounds" for Lightning and EMP Protection, Second Edition, PolyPhaser Corporation, 1993.

Rand, K. A., Lightning Protection and Grounding Solutions for Communications Sites, PolyPhaser Corporation, 2000.

Uman, M. A., All About Lightning, Dover Publications, Inc, New York, 1986.

Uman, M. A., Lightning, Dover Publications, Inc, New York, 1984. Uman, M. A., The Lightning Discharge, Dover Publications, Inc, New

York, 2001.

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Join the CW Revolution

Over the past few months there has been quite an increase in CW activity on the 40m band thanks to the efforts of all who have joined the Africa –CW group.

It used to be the ZS-CW group, but then there were a few Z2 stations who also became interested and also V5 stations.

Mike ZS6MSW has been pushing as hard as he can to get people to come up on CW and the fruit is starting to show.

On a daily basis you can hear stations calling CQ at all times, mainly looking for their 4 CW contacts a day. This was introduced after being told about the ZL stations who implemented it to also increase activity on the bands. A certificate will be made available to those who can manage 4 contacts a day from 200 to 250 - Bronze, from 250 to 300—Silver and 300 plus - Gold.

There is even a competition to see who can make the most CW contacts in one day and the record now sits at 15, held by two stations, namely ZS6MSW and ZS6ADY.

Weekends one can hear stations right through the day testing band conditions out from Div1 right through to Div6. The only ones who are classed as rare stations at the moment are Div2. When someone from Div2 calls in and they are heard, they almost get swamped.

On Saturday and Sunday afternoons there is a short speed QSO party to see who can make the most contacts between 16:00 and 17:00. Scores are then posted on the WhatsApp group and the winner gets a virtual medal.

With the SARL QRP contest and 40m Club contest, there was a tremendous amount of activity on CW. It is so good to hear that our bands here locally can be so busy with CW again.

Newbies, who have never done CW before to those who have decided to dust off their keys and get back into it again, are all there, beating out the tones trying to make contacts.

If you want to get involved, then get hold of Mike ZS6MSW, or go to the Facebook page and join up there. Send mike a message with your cell number to get on the WhatsApp group and hear what's happening daily. Best you switch of your notifications otherwise you might end up breaking your phone.

The WhatsApp group has a fairly large following with 43 participants so far. Now if all of them came up on frequency, we would be battling for space to have a QSO.

As with most groups, there are the regular chasers headed up by Mike, but you can hear regular guys like Eric ZS5EL, who often operates mobile from his farm in Richmond. Charles ZS1CF, Jannie ZS3CM, Arthur ZS5DUV, Tom ZS6OMT, Celso ZS1MYG, Daniel ZS1DY and a good few others who come in when they get the chance.

Get Radio active and play some CW again. No one is worried how slow or how fast you go, we are all just here to enjoy ourselves.

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Get your backdated issues at
http://www.awasa.org.za/index.php/newsletters

Visit our Website:
www.awasa.org.za

Antique Wireless Association of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association. Join by logging in to our website.

Notices:

Net Times and Frequencies (SAST):
Saturday 06:00 (04:00 UTC) —AM Net—3615
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3640
Saturday 08:30 (06:30 UTC)— National SSB Net— 7140; Sandton repeater 145.700
Echolink—ZS0AWA-L; ZS6STN-R
Relay on 3615 for those having difficulty with local skip conditions.
Saturday 14:00 (12:00 UTC)— CW Net—7020; (3550 after 15 min if band conditions not good on 40)
Wednesday 19:00 (17:00 UTC) — AM Net—3615, band conditions permitting.