



# Q SX-PE

JULY  
2026

NEWSLETTER FOR THE DISCERNING RADIO HAM

PORT ELIZABETH AMATEUR RADIO SOCIETY



## INSIDE THIS ISSUE

**MESHTASTIC  
UPDATE  
GROWING THE  
NETWORK**

**CLUB MTG  
MINUTES**



**MEMBER  
PROFILE  
YOUR DOSE  
OF DX**

**EARTHING  
TYPES**



**FOCUS ON  
CONTESTS  
IARU HF WORLD  
CHAMPIONSHIP  
RSGB IOTA**



**WHY THE  
ZS2 QSO  
PARTY IS  
SO SPECIAL**

**THE  
RULE BOOK**



PORT ELIZABETH AMATEUR RADIO SOCIETY  
ESTABLISHED EXCELLENCE IN AMATEUR RADIO

# CONTENTS

|  |                |
|--|----------------|
| <b>Club News</b>                               | <b>4</b>       |
| <b>Meshtastic Update - Growing the Network</b> | <b>5</b>       |
| <b>Minutes of the Last Meeting</b>             | <b>6</b>       |
| <b>From the Chairman</b>                       | <b>7</b>       |
| <b>Member Profile</b>                          | <b>8</b>       |
| <b>Diary of Events - July</b>                  | <b>9</b>       |
| <b>Birthdays and Anniversaries</b>             | <b>10 - 11</b> |
| <b>Famous Ham Birthdays in July</b>            | <b>12</b>      |
| <b>Your dose of DX</b>                         | <b>13</b>      |
| <b>Focus on Contests</b>                       | <b>14</b>      |
| <b>Zs2 QSO Party</b>                           | <b>15</b>      |
| <b>IARU HF World Championship</b>              | <b>16</b>      |
| <b>RSGB IOTA Contest</b>                       | <b>16</b>      |
| <b>The Rule Book</b>                           | <b>17</b>      |
| <b>* WRC 27 Preparations</b>                   | <b>17</b>      |
| <b>* WRC 27 Agenda</b>                         | <b>17</b>      |
| <b>Amateur Radio Station Earthing</b>          | <b>18</b>      |
| <b>* Earthing Types</b>                        | <b>18</b>      |
| <b>* Main Earthing Terminal</b>                | <b>19</b>      |
| <b>* Types of Earthing Systems</b>             | <b>20</b>      |
| <b>* TT Earth</b>                              | <b>21</b>      |
| <b>* Practical Implications</b>                | <b>22</b>      |
| <b>* Adopt Safe Operating Practices</b>        | <b>23</b>      |
| <b>Thank you</b>                               | <b>24</b>      |
| <b>Crossword</b>                               | <b>25</b>      |

## Disclaimer

The Editor, nor any PEARS club member shall be held liable for errors and/or omissions in any article and/or drawing contained in this newsletter. Furthermore, any view expressed is not necessarily that of the Editor, any committee member or other members of the Club. The material contained in this newsletter is not meant to defame, purge, humiliate and/or hurt someone's person or feelings. If copy is unintentionally infringed, we apologise. The newsletter is published as a free service to Amateur Radio Operators and friends.



# YOUR COMMITTEE

## Meet the team behind your Club!



Thank you to each of our committee members for their time, dedication and support.



**CHAIRMAN**

**Kevern**  
ZR2BK



**VICE CHAIRMAN | RAE**

**Vaughan**  
ZS2VR



**SECRETARY | REPEATERS  
QSO EMAIL | CLUB DATABASE**

**Chris**  
ZS2AAW



**TREASURER**

**Mike**  
ZS2MIC



**TECHNICAL | REPEATERS  
SEARCH & RESCUE  
EMERGENCY COMMUNICATION**

**Glen**  
ZS2GV



**COMMITTEE  
MEMBER**

**Andrew**  
ZS2AFB



**COMMITTEE  
MEMBER**

**Patsy**  
ZS2PTY



**COMMITTEE  
MEMBER**

**Odette**  
ZS2OD



**COMMITTEE  
MEMBER**

**Andre**  
ZS2ALN



# CLUB NEWS

## What's going on?

Welcome to the July 2026 version of the QSX. I am trying to mold the QSX into what our readers want to get every month. Given the many facets of this fine hobby, this is not a one size fits all. We have contestors, DXers, satellite "ornithologist", and then some really interesting folks as well.

I am dividing the magazine into different sections, but the first section will always be Club News with everything related to PEARS - minutes of the meetings, club activity reports, birthdays, etc.

The rest of the magazine will be made up of articles for DXing, Contesting, Regulations, and technical articles.

If you are interested in any of these topics, please consider offering to write a monthly column. If you can't, then please actively send articles to the news team so that we can help grow your interest in the QSX.

Finally, this is not a one man job. We are looking for a team of people wanting to make a great QSX. The team currently consists of Dave, Kevern, and Eugenie (who is responsible for the super cool new look).

The spinoff is that we will gather news and compile news bulletins, put articles into the QSX, and post on our various social media platforms.

The newsletter is an interactive newsletter. If you click on the contents page page numbers, it will take you directly to that page. To return to the contents page, click the page number at the top of any section. Happy paging!

Help us to help you get a great experience - but remember: You only get out what you put in!

## Editor

*Dave*  
ZS2DH



# MESHCORE

## Off-Grid Communications

*for everyone*



For those of you who are not aware, I have been experimenting with LoRa based messaging for over 4 years. In the beginning I had 2 T-Beam nodes, flashed with Meshtastic firmware, and drove around town seeing where the coverage from my QTH extended to.



### THE JOURNEY SO FAR

Soon after Andrew ZS2AFB and Eric ZS2ECH became interested, and from there the Meshtastic mesh expanded. We soon had a repeater on Slipper and in Longmore. Initial results showed good coverage, with me being able to access Slipper from my mobile passing Governors Kop. Things expanded rapidly, driven largely by Mike ZS2MDL who pushed many nodes out into the field. (More than 50 if I am not mistaken). However, even with all these nodes acting as repeaters, I was disappointed with the low success rate in getting direct messages delivered to an individual recipient.

**A new approach to off-grid communication built by enthusiasts, for everyone.**



### DISCOVERING MESHCORE

I noticed similar frustrations being expressed on the Meshtastic Discord channel with many ideas being proposed to improve the performance. Around January 2025 I became aware of a new project, Meshcore, which promised to overcome the problems inherent in the basic design philosophy of Meshtastic.



### MESHCORE HARDWARE COST ESTIMATE

| HARDWARE  | PRICE    |
|---|----------|
| RAK LoRa Module (RAK4631) + Baseboard (RAK19003)<br>Can be obtained in 433 or 868 | R 650.00 |
| 433mhz Antenna with N-Type connection   | R 540.00 |
| iPEX to N-Type Pigtail  | R 150.00 |
| 5000 mAh LiPo Battery   | R 200.00 |

*i* Prices are based on current exchange rates, final prices might vary slightly.



### EARLY TESTING

I started playing with the early Beta versions of the firmware, and associated Android Interface and was immediately surprised with the performance. Development proceeded rapidly, with the firmware being driven by Scott Powell and the Cell phone application coded by Liam Cottle.



### GROWING FAST

Meshcore is now 18 months old and has rolled out around the world with some areas already hosting upwards of 300 nodes.



### LOCAL PERSPECTIVE

Around the time that we started our Meshtastic experimentation, groups in Gauteng and Western Cape started up as well. They both went with the more standard 868MHz LoRa allocation while we have chosen 433MHz.

While the Meshtastic group in PE continued to function and expand, Meshcore progress was slow. We still managed to roll out repeaters at Slipper, Longmore, Kareedowberg, Suurberg and Zandvlakte, along with Summerstrand and other local suburbs.

A small group also started up in George using 433MHz but remained isolated from our PE mesh. Just recently there has been a big push in the Southern Cape with Andries ZS1SMP rolling out around 30 units. This has resulted in coverage now extending as far as Mossel Bay.

While Meshcore firmware can be loaded on many many different devices this is the hardware that I recommend.

Hope this has sparked an interest, watch for the next instalment.



### WHAT'S NEXT

Next month I will continue with more details on the actual setting up of a Meshcore device and give some guidance on operating.

*73 Tony ZR2TX*





# MINUTES

## PEARS MONTHLY MEETING

### PEARS Monthly Meeting Held at the German Club on the 23rd June 2026 at 19h30

**Welcome:** Chairman Kevern ZR2BK welcomed all present.

**Attendance:** Approximately 16 attendees. As per Register.

**Apologies:** ZS2DH, ZS2IW, ZR2CRS, ZS2SG

**Acceptance of previous meeting's minutes:**

**Proposed:** ZS2RT | **Seconded:** ZS2AFB

**Matters arising:** None

#### **Finances:**

ZS2MIC had reported that all was in good standing.  
ICASA licences all paid.  
Income from Ironman and another event, and subs came in.

#### **Events:**

- Algoa Rally postponed, possibly cancelled if no suitable date can be found. Rally calendar is set, so not easy to find an alternate date
- TransBaviaans latest - still going ahead. Route to be finalised. Logistically a nightmare or safety crews.. Bergplaas down Combrink's pass is gone
- Full ironman is no longer held in PE, has moved to Mossel Bay. Public support has dwindled
- Day-night Rally later this year
- LoFER to wrap up.

#### **RAE:**

- Starting again 22 July
- 7 names on the list
- Spread the word, invite interested persons

#### **Kevern:**

- QSX editor is ZS2DH
- Sub committee to handle news bulletins, socials and QSX. Subcommittee needs volunteers, please assist Dave ZS2DH!
- Bulletins will have compilers and given to readers as per roster. Fixed format each week.
- QSX published by 1st of the month. New look as published in June
- All contests, club events, birthdays and anniversaries are listed in calendar format.
- Lots of contests in July – a busy month. Specifically ZS2QSO party. Look in QSX for details

#### **Closure:**

Meeting ended at 20h07  
Next meeting 21st July 2026

#### **Field Day:**

- September. Club will cover the camping fees etc.
- Voortrekker camp site is unavailable
- Give suggestions for a venue.
- Saturday to Sunday

#### **Social:**

- Another one to be held soon
- Possibly a DF hunt, with bring and braai afterwards
- Keep the social aspect going

#### **Repeaters:**

- Uitenhage repeater to be resurrected at ZS2PA QTH
- Town and Slipper to be attended to

#### **SARL AGM:**

- SARL were very happy
- Best organised in a long time
- Centurion have been in touch asking for pointers etc

#### **Meshcore:**

- All the way from PE to Mossel Bay
- Club will purchase 5 repeaters for Cradock, Governorskop, Middelburg, Baviaanskloof Bakenkop?, Mount Kempt (for Lunga and the Hammies)
- Tony is dealing with orders and stock. 30 nodes went to Plett!

#### **Club shack:**

- Unfortunately not good news, too costly
- Might not be in PE, possibly in Kouga somewhere
- Needs to be a proper lease/agreement. Council has to approve it, and that is impossible at present with the current regime
- Maybe set up ZS2DCC, then use this to get space with the authorities

#### **General:**ZS2G

- Hamnet meeting at ZS2G 13h30 – 15h30 on 4 July
- Thanks to ZS2OD for hosting the recent gathering
- Morse practice – Tuesday evenings @ 7pm, 80m 3680kHz. Also a whatsapp group for learning Morse. Lots of online resources to practice. (MorseRunner)
- Uitenhage alternate site might be available, currently unused. Might be worth looking at.

#### **Speaker:**

Tony ZR2TX – Meshcore and OTA updates



# FROM THE CHAIRMAN

## Greetings to all,

Thank you for taking the time to read this month's edition of the new look QSX. Quite a bit of effort has been put into the new editions, and I encourage you to submit any articles or items of interest. Furthermore, a news team is being formed for the weekly bulletins, and if you would like to join the team, please let me know.

At the last monthly meeting, Tony, ZR2TX gave an interesting talk of where we are with Meshcore, the expansion of the network and the plans for the future. In this edition you can read all about Meshcore, and how to get on the air.

The club has decided to purchase another 5 Meshcore repeaters to deploy further East. These areas will include Governor's Kop, Cradock, Baviaanskloof East, King Williams Town. This will greatly improve the coverage throughout the Eastern Cape.

July is a busy month for contests, however there is an important contest coming up for our club, and that is the ZS2 QSO Party. I encourage each member get on the air for the duration of the contest (1 hour) as many South Africans will be hunting ZS2 call signs. You can read more on the ZS2 QSO Party in this QSX. Come on, let us make PEARS shine!

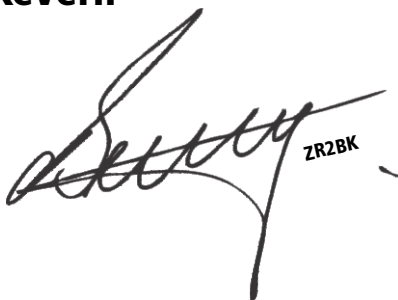
A reminder: Every Monday evening, same place, same time is our club's weekly bulletin, that is Monday evenings at 20h00 on the Lady Slipper Repeater. Please listen and call in afterwards, there are some important announcements on these bulletins and other interesting information that is shared.

Hopefully, I will be taking a trip to Lady Slipper soon to set out the Allstar Node Link, including Echolink, so that we can connect again to other repeaters in the country. Watch this space!

Andrew Gray, ZS2G, will be presenting Morse Code classes every Tuesday evening on 80m at 19h00, except the Tuesday when there is a club meeting. Please contact Andrew should you wish to join in and be added to the group.

Our next monthly meeting will be on the 21 st of July at the German Club in Port Elizabeth at 19h30. Please make every effort to attend our monthly meetings. We are also in the process of arranging another social, so please look out for the announcement. I wish everyone a good month ahead and stay warm!

**73,  
Kevern**



ZR2BK



# MEMBER PROFILE

# ZS2VR



## PERSONAL BACKGROUND

### Where and when were you born and where did you grow up?

Born 1971 in Port Elizabeth. Almost had free food for life from Pollys Saloon as mom and dad were there for dinner and I came early. Made it to St Josephs (now St Georges) in time. Went to school and studied here too.

### What is one childhood memory that still makes you smile?

Braaing on the side of Spandu Kop with my dad after abandoning the climb to the top after it started to storm. A very large kudu bull walked up to the clearing we were in looked at us, dipped its head and walked away calmly.

### What do you do for a living?

IT – a broad term, if you want specifics, I can bore you to death.

### What is something about your early life that people might find surprising?

Phoning my mom from Swakopmund Municipal Airport to tell her I would be home after dark and may need dad to come fetch myself, a friend and our bicycles from Algoa Flying Club. A long story and different times.

### What is something you're surprisingly good at?

I can sew 12 Dad taught me. He learned from his dad who was a sailmaker.

### What do you think the future has in store for the hobby?

People have forecast the demise of the hobby for decades. It is not going to die, but I think digital is going to grow and we are going to see a growth in network connected SDR's with integrated AI filtering and logging.

## AMATEUR RADIO JOURNEY

### When and how did you first get involved in amateur radio?

About 2010'ish. I was having lunch with Alex ZR2T and he mentioned the course was about to start. Two days later I was in the class.

### What was your first callsign and your first radio?

ZS2VR. First radio was an Alinco DX-SR8. I am still using it

### Who or what inspired you to get licensed?

A friend of the family. We would visit on a Saturday and I would sit in the shack looking at all the cards on the wall.

### What parts of the hobby do you enjoy most (HF, VHF,contesting,etc.)?

Mostly HF. I am not a contester. I enjoying operating portable doing SOTA etc.

### What is your proudest or most memorable radio moment?

Definitely working NA1SS!

### What is the most unusual or distant contact you've ever made?

2 stand out in my mind. The Amundsen–Scott South Pole Station and a hunter in northern Alaska working QRP with a wire in a tree.

### What equipment are you currently running in your shack?

My DX-SR8, FT-981 and Xiegu G90 – all through a magnetic loop in the garage roof.

### What project(s) are you currently working on (radio or otherwise)?

I acquired a few nice air-variable capacitors recently and am building a portable tuner.

## INTERESTS BEYOND RADIO



### What hobbies do you enjoy outside of amateur radio?

Radio controlled aircraft



### What books, music or films do you enjoy?

SciFi books and movies. Music – 80's rock and metal



### What is your favourite way to relax?

Easy answer. A cup of coffee with my cat curled up on my lap.

## YOUR PEARS CONNECTION

### How did you first get involved with the PEARS?

Joined when I was licenced but wasn't active in the club. I started attending because ZS2KU (SK) was keen and then stuck around after.

### What do you enjoy most about being part of the PEARS?

Being able to benefit from the experiences of others and the social aspect of meeting over a beer before or afterwards.

### What would you like to see more of in the PEARS or the QSX magazine?




















Other people's projects – not necessarily only local but from everywhere.



# DIARY OF EVENTS

# JULY

2026

| SUN  | MON   | TUES   | WED   | THURS   | FRI  | SAT  |
|--|---|--|---|---|--|--|
|  |   |  | 1   | 2   | 3  | 4<br>SARL Newbie<br>QSO Party  |
| 5<br>ZS5 QSO<br>Party<br><br> Nico<br>Oelofse<br>ZS4N               | 6   | 7<br><br> Aldrin<br>Baker<br>ZS2AGB | 8<br><br> Ronel<br>Du Plessis<br>XYL:ZR2BA | 9<br><br> Mario<br>Tiran<br>ZS1AMT   | 10<br><br> Mitch<br>Rundle<br>ZS2DK | 11 IARU HF<br>Championships<br><br> Gert<br>Schoeman<br>ZS2GS<br><br> Marius<br>Rautenbach<br>ZS2JR<br><br> Glynn<br>Rudman<br>ZS2SWL |
| 12<br>IARU HF<br>Championships<br><br> Sandra<br>Bowden<br>XYL:ZS2N | 13<br><br> Cyril<br>Hislop<br>ZS2EJ      | 14<br><br> Alex<br>Gogos<br>ZR2T    | 15  | 16<br><br> Annelie<br>Taute<br>XYL:ZS1AAZ<br><br> Anton<br>Brits<br>ZS2ST | 17   | 18 SARL<br>Winter<br>QRP<br>Contest<br><br><br><br> Marius &<br>Louisa<br>Rautenbach   |
| 19<br>ZS2 QSO<br>Party   | 20  | 21<br><br>PEARS MONTHLY<br>CLUB MTG | 22  | 23  | 24   | 25 SARL<br>40m<br>Club<br>Contest<br><br><br><br> David<br>Higgs<br>ZS2DH  |
| 26<br>ZS1 QSO<br>Party   | 27<br><br> Helle<br>Bernard<br>XYL:ZS2MB | 28   | 29  | 30  | 31   |  |



# BIRTHDAYS

02 July

Mario Tiran

ZS1AMT

05 July

Nico Oelofse

ZS4N

07 July

Aldrin Baker

ZS2AGB

10 July

Mitch Rundle

ZS2DK

11 July

Gert Schoeman

ZS2GS

11 July

Marius Rautenbach

ZS2JR

11 July

Glynn Rudman

ZS2SWL

13 July

Cyril Hishop

ZS2EJ

14 July

Alex Gogos

ZR2T

16 July

Anton Brits

ZS2ST

25 July

David Higgs

ZS2DH



# BIRTHDAYS & ANNIVERSARIES

## Spouse birthdays

|                |                               |               |
|----------------|-------------------------------|---------------|
| <b>08 July</b> | Ronel XYL of Basie Du Plessis | <b>ZR2BA</b>  |
| <b>12 July</b> | Sandra XYL of Neville Bowden  | <b>ZS2N</b>   |
| <b>16 July</b> | Annelie XYL of Manie Taute    | <b>ZS1AAZ</b> |
| <b>27 July</b> | Helle XYL of Mark Bernard     | <b>ZS2MB</b>  |



## Wedding Anniversaries

♥ **18 July** Marius & Louisa Rautenbach **ZS2JR**



# FAMOUS HAM BIRTHDAYS IN JULY



## July 1 - King Hussein of Jordan (Jy1)



One of the most famous hams in history | Silent Key, but still widely celebrated



## July 6 - Les Paul (W9NTP)

Guitar legend and inventor | Licensed ham and recording pioneer



## July 11 - Arthur Godfrey (K4LIB)

American radio and TV personality | Very active ham in his era



## July 12 - Walter Cronkite (KB2GSD)

Iconic news anchor | Strong supporter of amateur radio; narrated ARRL films



## July 20 - Carlos Menem (LU1SM)

Former President of Argentina | Licensed amateur radio operator



## July 26 - Bob Heil (K9EID)

Founder of Heil Sound | Major figure in ham audio and contesting



# YOUR DOSE OF DX

**Mozambique, C9.** Vasily, R7AL and Slav, OK8AU have been active as C91RU from Ressano Garcia, Mozambique since 1 June. Length of stay is not known. They operate CW and digital on 80 to 10 metres when time permits. QSL via Club Log's OQRS. See <https://www.qrz.com/db/C91RU> for possible updates.

**Germany, DL.** Look for DL0WRTC, DL2026W, DL2026R, DL2026T and DL2026C to be active between 1 June and 31 July "to support and accompany" the World Radiosport Team Championship 2026. QSL via Club Log's OQRS, LoTW, DCL (DARC Community Logbook), or via DK5ON. See <https://hamaward.de/wrtc26-award-rules/> for the award.

**Germany, DL.** Look for DF26FIFA, DF2026WM (Weltmeisterschaft, i.e. World Championship), F2026C, DF2026M and DF2026U to be active between 10 June and 20 July "to celebrate and accompany" the men's football (soccer) world championship (FIFA World Cup 2026) to be held in Mexico, Canada and the USA. QSL via Club Log's OQRS, LoTW, DCL (DARC Community Logbook), or via DK5ON.

**Miquelon Island FP** - Once again Eric, KV1J will be active as FP/KV1J from Miquelon Island (NA-032) from 27 June to 13 July, including activity in the IARU HF World Championship (11-12 July). He will operate primarily SSB and digital, plus some CW and digital, on 80 to 6 metres, "generally on the highest frequency band open" with a focus on 12, 10 and 6m. QSL via LoTW, Club Log's OQRS, eQSL, or via KV1J direct or bureau). See <http://www.kv1j.com/fp/July26.html> for more details.



Photo's sourced from above websites.





## IARU HF World Championship

**Date:** 11-12 July 2026 (second full weekend of July)

**Modes:** CW, SSB

**Notes:** One of the largest global HF contests.

**More information:** <https://www.arrl.org/iaru-hf-world-championship>

## CQ WW VHF Contest

**Date:** 18-19 July 2026 (third full weekend of July)

**Bands:** 6 m & 2 m

**Modes:** CW, SSB, Digital

**More information:** <https://cqww-vhf.com/>

## RSGB IOTA (Islands on the Air) Contest

**Date:** 25-26 July 2026 (last full weekend of July)

**Modes:** CW & SSB

**Notes:** Very popular with African island activations.

**More information:** <https://www.rsgbcc.org/hf/rules/2019/riota.shtml>



Also worth a mention is the **SARL HF Contests** in **August**.

Whether the PEARS musters up a team, or you enter as an individual, this is as big as it gets on the local contest scene.



**SARL HF Phone, Digital, and CW contests** take place on 2, 9, and 23 August.

All the details are in the SARL Blue Book - a free download from the [mySARL.co.za](https://mySARL.co.za) website.



# WHY THE ZS2 QSO PARTY IS SO SPECIAL!



**Dave Higgs, ZS2DH**

If you are interested in getting your Worked All ZS (WAZS) awards, finding out what it is like to work a pileup, or just want to feel important - the ZS2 QSO party is the easiest way to go about it.

According to the organisers (that is us - PEARS) the Aim is to promote activity on the bands. The bottom line is that this is the aim of ALL the QSO parties, so what makes this one special. Well, you see, it comes down to the scoring.



## FOCUS ON ZS2

During the **ZS2 QSO** sprint, the focus is on **ZS2**. That means that all those hams out there from other zones all get additional points for working you rather than any other zone. So, a ZS6 is vested in working you rather than a ZS1/3/4/5/6 because he gets double points for all **ZS2** stations worked. The same then applies to the ZS3 guys. And the ZS4 guys. You get the idea - they all **WANT TO WORK YOU!** When you call, they are actively listening for you and they will pounce you.



## EASY POINTS OUTSIDE ZS2

The other good news is that you get 2 points for every contact **OUTSIDE** of **ZS2**. So, whether it is ZS1/3/4/5/ or 6 - you get 2 points. They only get 2 points if they work a **ZS2** station.

I know it hardly sounds fair - but the ZS3 guys prefer the ZS3 QSO party more than we do.



## MORE EXPECTED QSOs

This, however, comes with one expectation - **ZS2** stations are expected to be on the air.

**The ZS2QSO Party is 19 July  
between 14:00 and 15:00 UTC  
with all the information you need  
on page 56 of the SARL Blue Book.**

**Go on, you deserve it!**



**MARK YOUR  
CALENDAR!  
19 JULY  
14:00-15:00 UTC**



*Tune in. Call out. Get those points.  
Be part of something special.*

**ZS2 QSO PARTY – DON'T MISS IT!**



# IARU HF

# WORLD CHAMPIONSHIP

## A Global 24 Hour Sprint

The IARU HF World Championship, held every year on the second full weekend of July, is one of the most dynamic events on the contesting calendar. Unlike many major contests that stretch across 48 hours, the IARU is a focused 24 hour sprint where strategy, propagation awareness, and operator stamina all play equal roles.

## WHAT MAKES IT SPECIAL?

What makes this contest unique is the presence of IARU member society HQ stations, each representing their national amateur radio organisation. These stations become high value multipliers and chasing them across the bands adds a lively "treasure hunt" element to the event. Operators can choose between CW, SSB, or mixed mode, and the contest is open to both single operator and multi operator stations.

## WHY SOUTH AFRICANS LOVE IT

For South African amateurs, the IARU **HF World Championship** offers excellent opportunities to work rare regions and strengthen DXCC totals. Mid winter conditions often favour 40m and 20m, with 15m occasionally opening to Europe and Asia.

**Whether you're a seasoned contester or a casual operator, the IARU HF World Championship remains one of the most accessible and rewarding events of the year.**

# RSGB IOTA CONTEST

## Celebrating the World's Islands


The RSGB Islands on the Air (IOTA) Contest, held on the last full weekend of July, is a celebration of geography, adventure radio, and the spirit of exploration. First launched in 1993, the contest encourages operators to contact stations located on islands around the world, each identified by a unique IOTA reference number.


What sets IOTA apart is the sheer variety of activations. From rugged North Atlantic outposts to tiny tropical atolls, hundreds of islands come alive with portable and expedition style operations. Many teams operate in challenging conditions, making the contest a showcase of fieldcraft, antenna ingenuity, and operator resilience.


## GREAT NEWS FOR SOUTH AFRICAN OPERATORS

For South African stations, IOTA offers excellent DX opportunities, particularly on 20m and 15m during daylight hours. The contest is friendly to both high power and low power operators, and even modest stations can log impressive island totals. With its blend of contesting and DXpedition excitement, the IOTA Contest remains a highlight of the mid year operating season.


### QUICK FACTS

 **DATE**  
Second full weekend of July

 **DURATION**  
24 Hours

 **MODES**  
CW, SSB, or Mixed


 **BEST BANDS**  
40m, 20m, 15m  
(15m for possible openings to Europe & Asia)

 **WHY PARTICIPATE?**


- Work IARU HQ stations
- Earn valuable multipliers
- Improve DXCC totals
- Be part of a global event!





### QUICK FACTS

 **DATE**  
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20m, 15m  
(best during daylight)

 **WHY PARTICIPATE?**

- Work rare island locations
- Great DX opportunities
- Enjoy the adventure
- Suitable for all power levels



**July is Contest Month - Two World-Class Events.**

*Which one will you join?*



# The

# RULE BOOK



## REGULATIONS AND REGULATORY INFORMATION



### WRC 27 PREPARATIONS

#### SETTING THE STAGE FOR THE NEXT GLOBAL SPECTRUM CONFERENCE

Although the World Radiocommunication Conference (**WRC-27**) is still more than a year away, international preparations are already well underway. These early stages are critical, as national regulators, regional telecommunications bodies, and amateur radio organisations begin shaping their positions on key agenda items.



For the amateur service, the preparatory cycle involves technical studies, compatibility assessments, and coordinated advocacy through bodies such as the IARU, CEPT, ATU, and ITU working groups. South Africa participates through ICASA and the African Telecommunications Union, ensuring regional perspectives are represented.

The months leading up to WRC-27 will determine how well amateur interests are protected and promoted. Engagement at this stage is essential, as once positions are finalised, they become the basis for negotiations at the conference itself. For radio amateurs, staying informed about the process helps ensure our community remains an active stakeholder in global spectrum management.

### WRC 27 AGENDA

#### KEY ISSUES AFFECTING THE AMATEUR SERVICE



WRC 27 will address a wide range of spectrum matters, but several agenda items are of particular interest to the amateur radio community.



#### **1. The 23cm Band and GNSS Coexistence**

One of the most closely watched topics is the ongoing study of potential interference between amateur operations on **1240 - 1300 MHz** and global navigation satellite systems (GNSS). While amateur allocations are not under threat, regulators are examining technical and operational measures to ensure long term compatibility.



#### **2. HF Digital Mode Spectrum Use**

With the rapid growth of digital modes such as FT8, JS8Call, and VARA, WRC 27 will review how HF spectrum is being utilised globally. Discussions may include band planning principles, congestion management, and the balance between narrowband and wideband emissions.



#### **3. Satellite and Space Service Coordination**

As the number of non amateur satellites increases, coordination between amateur satellite allocations and commercial space services is becoming more complex. WRC 27 will examine sharing studies and long term protection of amateur satellite segments.



#### **4. Emerging Technologies and Spectrum Pressure**

The conference will also consider new demands from 5G/6G, autonomous systems, and high altitude platforms. While not directly targeting amateur bands, these pressures influence the broader spectrum landscape and require careful monitoring.



**WRC 27 will shape the regulatory environment for years to come, and the amateur community's involvement through the IARU and national societies remains essential.**



# AMATEUR RADIO STATION EARTHING

Chris Turner, ZS6GM

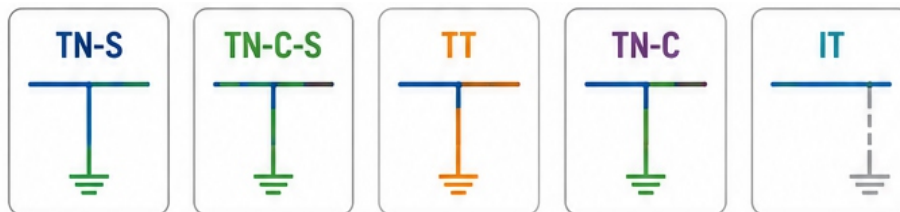
In the first part of the article published by Chris, we looked at what Earthing your station means, why it is important, and some basic terms of reference. This month we will look at Earthing types and their implications for Radio Amateurs.

## EARTHING TYPES



Mains electricity systems are categorised according to how the earthing is implemented. The common ones are TN-S, TN-C-S and TT.

There are five types of earthing systems:



Where those letters indicate:

- T** = Earth (from the french word Terre)
- N** = Neutral
- S** = Separate
- C** = Combined
- I** = Isolated

### FIRST LETTER

**T** The live parts in the system have one or more direct connections to earth.

**I** The live parts in the system have no connection to earth, or are connected only through a high impedance.

### SECOND LETTER

**T** All exposed conductive parts are connected via your earth conductors to a local earth (ground) connection.

**N** All exposed conductive parts are connected via your earth conductors to the earth provided by the supplier.

### REMAINING LETTER(S)

**S** Combined neutral and protective earth functions (same conductor).

**C** Separate neutral and protective earth functions (separate conductors).



# IN SUMMARY

## TN-C

No separate earth conductors anywhere - neutral used as earth throughout the supply installation (very rarely used but is sometimes found in old houses with overhead supply).

## TN-S

Most common in older houses, with the supplier providing a separate earth conductor back to the substation. The earth may be a separate conductor with overhead wire supply or the sheath on underground cable supply.

## TN-C-S

(Protective Multiple Earthing) Supply combines neutral and earth, but they are separated out in the installation. More common in newer houses and those with overhead bundled supply cables.

## TT

No earth provided by supplier; installation requires its own earth rod etc. Note that a local TT earth in older installations will frequently not offer a low enough impedance by itself to provide adequate operation of an earth leakage circuit breaker also known as an RCD or residual current device.

## IT

Supply is a special case which does not have an earth provided by the electricity distributor. It is often provided as a special supply for Information Technology equipment that needs a noise free electrical supply. A portable generator or inverter or solar installation may also be an IT Supply because it has no external earth connection but supplies its own earth rod.

## MAIN EARTHING TERMINAL

The main earthing terminal (MET) in a building is the place where the main earth, the main equipotential bonding conductors, and the connection to the circuit protective conductors for installation's circuits meet.

On smaller installations this will frequently be hidden away inside a distribution board, where the main earth bus bar has additional connection points for the connection to the main earth, individual earth wires and bonding conductors.

### Note on Utility (electricity distributor) earthing

The electricity utility / distributor has specific earthing requirements on the distribution network to ensure safety and supply security. Consumer electricity supplies are derived from high voltage distribution networks via distribution transformers or sub-stations. Modern suburban distribution networks make use of so called mini-substations and many urban and rural distribution systems use pole mounted transformers.

#### Earthing provides two main protective purposes.

1. Should a fault occur on a transformer or sub-station earthing prevents dangerous high voltages from being accidentally transferred onto the low voltage 230/400 volt consumer supply;
2. The earth connection on the neutral conductor or star centre point on a 3 phase supply ensures that the consumer supply voltage cannot rise to dangerous levels above mass earth. (note: a failure on the neutral can cause a higher (or lower) than expected potential between one or more phases and neutral).



# TYPES OF EARTHING SYSTEMS



## TN-S system

This system has the neutral of the power supply connected to earth at only one point at the source - substation. The consumer's earthing terminal is usually connected to the metallic armour of the distributor's cable into the HV / LV transformer.

The earth terminal is connected by the supply protective conductor (PE) back to the star point (neutral) of the secondary winding of the supply transformer, which is also connected at that point to an earth electrode. The consumer installation does not have its own earth but relies entirely on the earth provided by the electricity distributor.

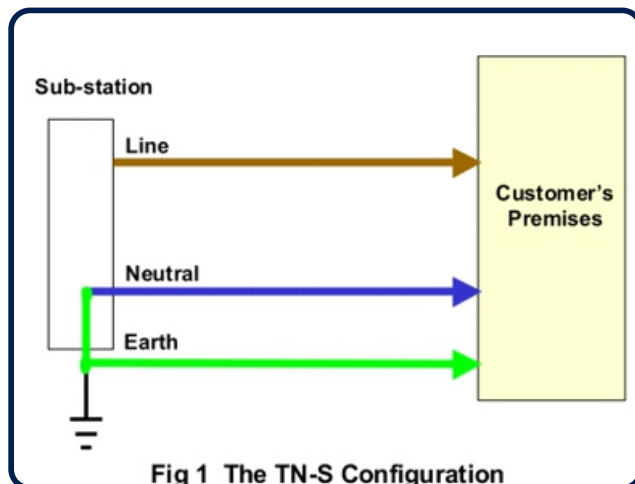


Fig 1 The TN-S Configuration

## TN-C-S system

The system has the supply neutral conductor of a distribution main connected to earth at source as protective multiple earthing (PME). The supply distributor neutral conductor is also used to return earth fault currents from the consumer installation back to the source.

The electricity distributor will provide a consumer's earthing terminal which is linked to the incoming neutral conductor and the consumer's distribution board. This combined earth and neutral system called the 'protective and neutral conductor' (PEN) or the 'combined neutral and earth' conductor (CNE). Many installations may not have a local earth rod at the consumer distribution board and may simply rely on the incoming PEN. In effect it acts as a TN-S system.

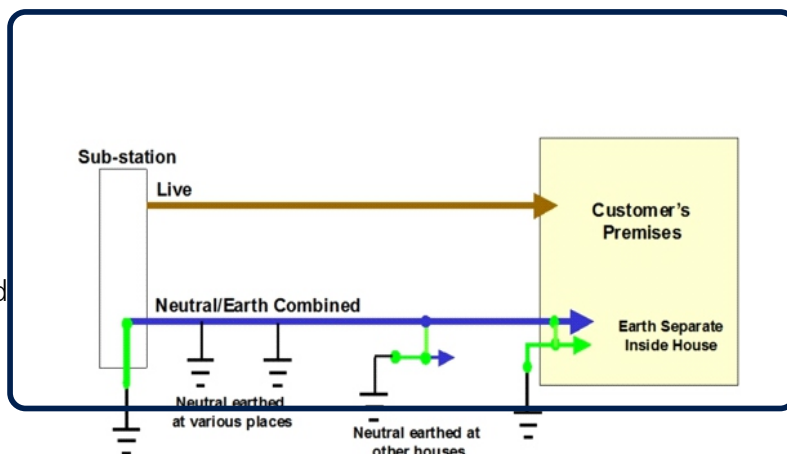


Fig 2 The TN-C-S Configuration

## TT system

No earthing system is provided by power distributor. The owner must install the earthing protection by their own connection to the earth. A low impedance earth using a suitable electrode and safe arrangement meeting the wiring regulations must be provided.

The neutral and earthing conductor must be separate throughout the installation because power distributor only provides the supply neutral for the connection to consumer.

The advantage of the TT system is that earth is free from externally induced high or low frequency noise. Another important advantage in special applications such as IT and radio communications, there is negligible risk in the case of a failure or break in the supply neutral conductor.

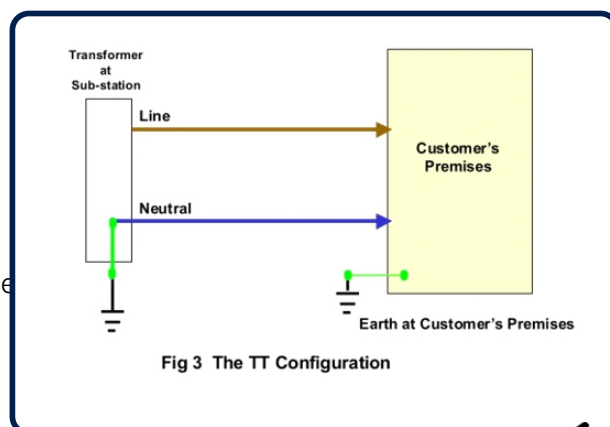


Fig 3 The TT Configuration

It is essential that a TT system incorporates an earth leakage (RCD) circuit breaker.



## Why would I want a TT earth?

There are a number of ways that an earth can be provided for an electrical installation. Of the available types TN-S and TN-C-S, where your electricity supplier provides an earth, are by far the most common. The next most common category is the TT type.

You will encounter this situation where the electricity supplier does not provide any connection to allow the installation to be earthed. If you are working on an electrical installation in an outbuilding it may not be appropriate or may even be dangerous to export the main earth.

In the case of an Amateur Radio shack where an RF and/or lightning earth are essential for safe operation it is desirable for a number of reasons to isolate the shack earth from the main earth.

One instance is where there is a break or high resistance in the incoming neutral conductor. Figure 4 illustrates how a neutral fault can cause high current to flow from other households via the shack earth system. It is also possible in a TN-C-S system for dangerous situation to occur where there can be a considerable potential difference (voltage) between the incoming main earth and the real mass earth.

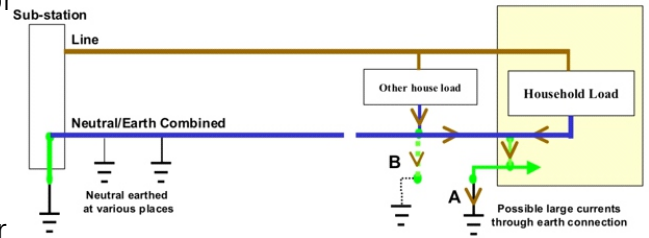


Fig 4 A Ruptured Neutral In a TN-C-S System

**Because a TT earthing system will safeguard both lives and equipment it is important that a correctly designed system be installed.**

**It should have:**

- ✓ **It's own earth leakage protection device**
- ✓ **Low enough electrical resistance to earth to ensure correct operation of the circuit earth leakage device.**
- ✓ **Good repeatability, that is it should be able to carry fault currents repeatedly, and its performance should remain in spec all year round, irrespective of varying soil conditions**
- ✓ **High resistance to corrosion**
- ✓ **Long life expectancy**



## SUMMARY OF THE DIFFERENT SYSTEMS

### What system do I have?

The wiring code in South Africa is derived from the British system. The South African wiring code was originally written around standardisation on TN-S which means that this system is pervasive for systems installed there since 1960, reinforced by inspections.

Note that the code evolves continuously and many older or extended installations will have detail non-compliance in the older portion. One important area is earthing due to the transition from steel to plastic conduits.

| Electrical system type        | TN-S           | TT   | IT                            | TN-C           | TN-C-S          |
|-------------------------------|----------------|--|-------------------------------|----------------|-----------------|
| Earth fault loop impedance    | Low            | High   | Highest                       | Low            | Low             |
| RCD                           | Yes            | Yes  | N/A                           | No             | Yes             |
| Need earth electrode at site? | No             | Yes  | Yes                           | No             | Yes             |
| Risk from broken neutral      | High           | No   | No                            | Highest        | High            |
| Safety                        | Safest         | Safe   | Less Safe                     | Least Safe     | Safe            |
| Electromagnetic interference  | Low            | Least  | Least                         | High           | Low             |
| Safety risks                  | Broken neutral | If earth impedance high, poor attenuation step voltage | Double fault overvoltage      | Broken neutral | Broken neutral  |
| Advantages                    | Safest         | Safe and reliable                                      | Continuity of operation, cost | Cost           | Safety and cost |





# PRACTICAL IMPLICATIONS FOR THE RADIO AMATEUR WITH A TN-S SUPPLY

## 1. MAKE SURE IT WORKS ON AN ON-GOING BASIS



It is not sufficient to press the test button on the RCD (Earth leakage relay) to see if it trips. Although this is a step in the right direction, it tells you nothing about compliance of wiring to the socket outlets. Purchase a tester like the illustration and test every socket outlet routinely once a year, and after interventions.



## 2. EARTHING - KEEP IT SEPARATE

**Your shack system should be earthed separately, without connecting that earth to the earth supplied to your distribution board by the utility.**



The reason for this is that regardless whether you have a single phase or 3 phase supply, the neutral is earthed by the utility at the star point of the supply transformer and that earth is brought separately to your switchboard.

Since the phases are rarely balanced, currents could flow between the earths, impairing the RCD function, and under fault conditions outside your system, the currents could be extreme.

## 3. DEDICATED SUPPLY FOR YOUR SHACK

**It is prudent to equip the shack with an exclusive supply from a dedicated Circuit Breaker, MCB on the switchboard.**



While it was stated earlier that earthing is installed to avoid the risk of fire in electrical installation systems, it is not the sole means of protection. The MCB's are calibrated devices to trip at a pre-determined current level. This is to cater for severe phase to neutral faults where there may be no earth leakage for example shorted turns on a transformer primary with a high likelihood of fire. A separate MCB allows the selection of a suitable lower current rating for the shack for example 10 amps rather than much higher levels for shared socket outlet circuits.

## 4. DISTRIBUTE EARTH IN YOUR SHACK

**Your "Shack" earth should be distributed within the shack and equipment provided with an earth stud, or a wire to a suitable chassis point connected to it to prevent across the chest potentials when operating adjacent pieces of equipment.**



Some shared sockets connected to this earth are effective parking bays for antenna plugs to continuously discharge static when not in use. So called Universal equipment will need an isolating transformer to do this.



## 5. SAFE PRACTICE - SAFE RADIO

Adopt safe operating practices and habits in the shack. Troubleshooting and home-brewing equipment greatly increases the risk of accidental contact shock over just operating commercial equipment.




# ADOPT SAFE OPERATING PRACTICES AND HABITS IN THE SHACK





Troubleshooting and home-brewing equipment greatly increases the risk of accidental contact shock over just operating commercial equipment.


## SOME EXAMPLES ARE:


 Take voltage measurements with one hand immobilised e.g. in the pocket using clip-on probes.


 Remove metallic adornments (rings, jewellery etc...) from fingers and wrists when testing.

 Make a plug in fixture to safely measure mains voltage and input current to equipment.

 When making temporary connections to transformers for radio testing, include an earth connection to the transformer frame and core.

 Convert older radios from 2 wire to 3 wire cables and connections. Use a plug where the earth pin is longer and engages before the phase and neutral.

 When using Variacs and auto-transformers, before powering up, ensure the earth is continuous from input to output and that the neutral is the common rail, not the phase (otherwise your 110 volt radio will have 230 volts on it and the other lead 110V!). Primary and secondary fusing just above the rating is good fault clearing and fire prevention practice.

 Receiving a shock is accompanied by muscular responses which can be severe. Ensure the zone you occupy is sufficiently free from sharp, loose or heavy obstacles to avoid injury, especially behind you.

## LAST WORD

Your earth system is provided for your safety and to protect your property. It is therefore important that any electrical work be undertaken by a properly qualified electrical contractor.

Additional reference material is provided in the RSGB publications in the bibliography below.

An effective mains earth is not necessarily an effective RF earth. The construction and installation of an effective RF earth is a separate topic



## BIBLIOGRAPHY

Earthing and the Radio Amateur - EMC07 Basic Leaflet, Radio Society of Great Britain  
Earthing and the Radio Amateur - EMC07 Advanced Leaflet, Radio Society of Great Britain



# CROSS WORD

HOW MANY WORDS FROM THE  
PHONETIC ALPHABET CAN YOU FIND?

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| A | L | P | H | A | B | C | J | D | R |
| U | L | U | Z | P | E | F | U | G | O |
| H | I | G | F | A | G | O | L | F | M |
| E | C | H | O | P | H | Z | I | H | E |
| O | L | O | X | M | P | J | E | O | O |
| S | R | V | T | K | M | D | T | T | V |
| C | H | A | R | L | I | E | Q | E | A |
| A | K | R | O | G | K | L | O | L | M |
| R | L | B | T | X | E | T | O | L | I |
| D | F | I | N | D | I | A | W | R | L |

Up to 5  
6 to 10  
11 to 15  
17 to 26  
27+

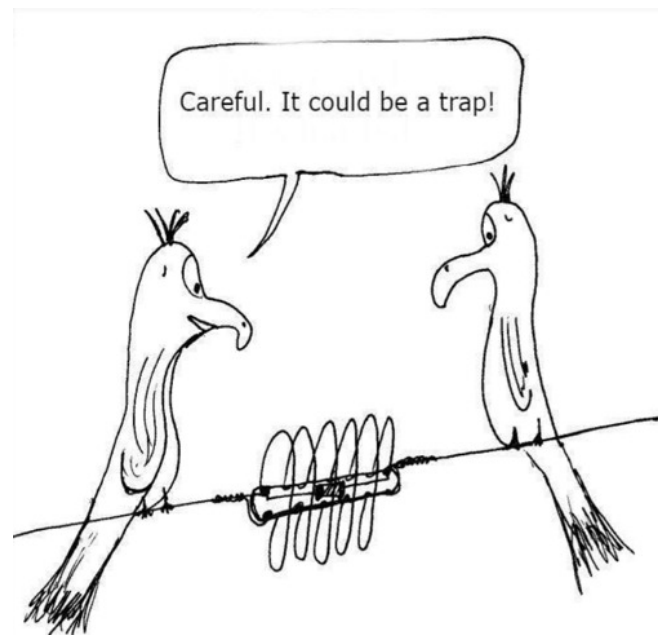
Ok, not great  
Not bad  
Good  
Very good  
You Cheat!



# THANK YOU

**As we wrap up this month's edition of QSX, thank you to every member who contributes to making our club what it is. Whether you are calling CQ, attending club activities, sharing knowledge, or quietly following along from home, your involvement helps keep our community strong and growing.**

**Until next month, enjoy the hobby, keep exploring the bands, and may your logbook always gain a few new contacts.**



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