PRETORIA PARC C/K

Logo by ZR6FD

PARC Fleamarket 4th October 2014

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Next Events

Club social at SAM's
Thursday 6 Nov 7:00PM

Club committee meeting at SAM's
20 Nov 7:00PM

PARC Committee Members / Komiteelede : 2014 – 2015

Chairman, Social & Rallies	Johan de Bruyn	ZS6JHB	zs6jhb@gmail.com	012-803-7385	079-333-4107
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SARL liason	Fritz Sutherland	ZS6SF	fritzs@icon.co.za	012-811-3875	083-304-0028
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Web co-ordination	Graham Reid	ZR6GJR	greid@wol.co.za		083-701-0511
RAE, Bulletin co-ordinator	Vincent Harrison	ZS6BTY	zs6bty@telkomsa.net	012-998-8165	083-754-0115
Contests	Pierre Holtzhausen	ZS6PJH	zs6pjh@telkomsa.net	012-655-0726	082-575-5799
Repeaters	Craig Symington	ZS6RH	zs6rh@hotmail.co.za		081-334-6817
Fleamarket	Alméro Dupisani	ZS6LDP	almero.dupisani@up.ac.za		083-938-8955
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Secretary, WATTS newsletter	Louis de Wet	ZS6SK	louis.zs6sk@gmail.com	012-349-1044	072-140-9893
Contests	Jaco Cronje	ZR6CMG	jaco.cronje@mobaxgroup.com		076-319-1057

Birthdays – November / Verjaarsdae - November

06 Salomon (ZS6SV)
10 Luther Uys (ZS6E)
12 Fritz Sutherland (ZS6SF)
12 Eduard Ras (ZR6RAS)

12 Vlasta Jancuskova (ZS6-2501)
20 Jacobus de Wit (ZR6FDW)
25 Gordon Procter (ZS6AGV)

Spouse's Birthdays (Nov)

No spouse birthdays for November

Anniversaries / Herdenkings (Nov)

11 Andries and Ronel Hendriks (ZSL006)
14 Tjerk and Sylvia Lammers (ZS6P)

Lief en Leed / Joys and Sorrows

Doreen, the sw of Johan de Bruyn was involved in an accident, but fortunately did not sustain any injuries.
Fritz Sutherland lost his brother, who passed away during an operation. Our Sincere Condolences.
Molly Peer has been admitted to hospital for treatment.

Diary of Events – November / Dagboek van Gebeure - November

01	Antique Wireless Association & KARTS Flea Market
01	Radio Technology in Action. Cape Peninsula University of Technology
01-02	Ukrainian DX Contest 12h00 to 12h00
02	DARC 10-Meter Digital Contest 11h00 to 17h00
03 -04	2nd Annual International Africa Cubesat Workshop. CP UT Belville Campus
08-09	WAE DX Contest, RTTY 00h00 to 23h59
09-10	OK/OM DX Contest, CW 12h00 to 12h00
15-16	SARL Field Day Contest 10h00 to 10h00
15-16	SARL VHF / UHF / Microwave Contest
15-17	ARRL Sweepstakes Contest, SSB 21h00 to 03h00
22-23	LZ DX Contest 12h00 to 12h00
29-30	CQ Worldwide DX Contest, CW 00h00 to 24h00

Dates for 2015 Flea Markets :   28 March ; 2 May ; 25 July ; 31 October
Please contact Almero Dupisani (ZS6LDP) for any enquiries

PARC SUBS / LEDEGELD FROM / VAN 30-06-2014

Please remit your subs in time to our Treasurer or by transfer to:
Betaal asb. U ledegeld betyds aan ons tesourier of per oorplasing aan:

Bank   : FNB   **Ordinary members/ gewone lede R150**
Branch   : 25 20 45   **Spouses, pensioners   R50**
Account : 546 000 426 73

Your call sign must appear as statement text!

Despite the cold and overcast conditions, a fair number of people attended the flea market on the 4th of October at the Pioneer Museum. Thank you very much to Almero Dupisani who organises the fleamarkets and to Sharmaine de Wet and Kerry Bezuidenhout who helped at the food and coffee stand.

This article by Hans van de Groenendaal, ZS6AKV, which recently appeared in Engineer IT, describes an incident on Gough Island where other radio communications failed, and amateur radio came to the rescue.

Gough Island emergency – amateur radio to the rescue

Hans van de Groenendaal, ZS6AKV, South African Radio League

It has often been said that when all communication fails, you can depend on amateur radio. This was again proven on 9 August 2014 when an important message from Gough Island to the Department of Environmental Affairs could not be sent as their links were down.

The story started when Pierre Tromp, ZS1HF, volunteered to go to Gough Island in the South Atlantic ocean in February 2014, after a member of the 2013/2014 Gough team sadly passed away on the island. Tromp passed the necessary tests and was shipped to Gough Island. As a radio amateur he also obtained the call sign ZD9M. He is a veteran of doing duty on remote islands; having not so long ago returned from a year on Marion Island.

Tromp and a Cape Town radio amateur Trevor Brinch, ZS1TR, started the 7110 kHz SARL Hamnet Emergency Net in January 2014, and established daily communication on 30 and 40 m depending on propagation. Once Trompt was on Gough Island they tried to maintain daily calls, but due to the distance to Gough, they had to adjust their frequencies. In the summer months they could communicate on all HF bands, but as the winter approached it became trickier. Propagation between the island and South Africa mainly favoured the lower frequencies.

Communication later developed into a regular call-in at ten minutes after the hour. As the winter approached the satellite signal between Gough and South Africa became intermittent due to the cloud cover and other climatic conditions. Tromp's more reliable communication with home became HF amateur radio with Brinch, who relayed the messages to the Department of Environmental Affairs (DEA) technician to try and get the satellite system reset and working again.

During the weekend of 9 August, a serious incident occurred on Gough Island. As the satellite connection to South Africa had been poor since the first week of August, Tromp decided to radiogram it to Brinch in Cape Town. The message contained 836 words, excluding that of many email recipients, and was sent a few words at a time and corrected and repeated back for confirmation. The entire process took about 1 hour 45 minutes to transfer via HF radio,

Trevor Brinch – receiving a message under poor radio conditions is a real challenge.

Pierre Tromp operating from Gough Island as ZD9DM.

which forced them to alternate between 20 and 30 m as conditions were fading in and out on both frequencies. The message was retyped into email format and sent to the various recipients, according to Brinch.

It was a good exercise, with HF radio and radio amateurs showing what it is all about: communication at all costs. The reward was the contentment that an emergency message was received by the recipients in good time, and the thanks from them for a message which otherwise would not have arrived.

Gough Island is a volcanic island rising from the South Atlantic Ocean to heights of over 900 m above sea level with an area of 91 km². It is a dependency of Tristan da Cunha, which in turn is a dependency of the British overseas territory of Saint Helena. South Africa has been operating a weather

station on contract on Gough Island since 1956. Initially it was housed in the station at The Glen, but moved to the South Western lowlands of the island in 1963 where weather observations are more accurate. This weather office operates the same as stations in South Africa with hourly climate observations and twice daily upper-air ascents. The Department of Environmental Affairs' Southern Ocean and Antarctic Support Directorate administrate the station.

The island is uninhabited except for the six to eight expedition members of the weather station as part of the South African National Antarctic programme (SANAP), and is thus one of the most remote places with a constant human presence. It is a lonely place at about 400 km southeast of the other islands in the Tristan da Cunha group, is 2700 km from Cape Town, and over 3200 km from the nearest point of South America.

PARC SOTA Activation 12th October 2014 – ZS/GP-012 - Bronberg

The PARC members Theo (ZS6TVB), Pierre (ZS6PJH), Jaco (ZR6CMG) and Johann (ZS6ETA) set out to activate the Summit On The Air (SOTA) on 12 October 2014. The SOTA with the name ZS/GP-012 had never been activated in the past. Not only was this type of event new to all of us activating the SOTA but the activation of the specific summit was also a first! The first radios were up and running by 11:00 SAST as advertised and we carried on playing radio until well after 14:00. During the course of the day, we were also joined by Vince (ZS6BTY) and his XYL Heather, Charles (ZS5CH) and Pieter (ZS6PA). The bands were busy and the contacts streamed in. We even experienced some pile-ups on 40m (7.075MHz) at times. In total, close to 100 contacts were made both locally and number of DX contacts in the short period we operated. We would like to especially thank those that came and joined us at the summit but also express our gratitude to all club members and OM's that gave us the contacts making the day a great success loaded with fun for all of us!

With thanks :The ZS/GP-012 SOTA team of 12 Oct 2014 (ZS6TVB, ZS6PJH, ZR6CMG, ZS6ETA)

Photos can be downloaded from: https://www.flickr.com/photos/zs6tvb/sets/72157648196036178/

Report by Theo Bresler ZS6TVB
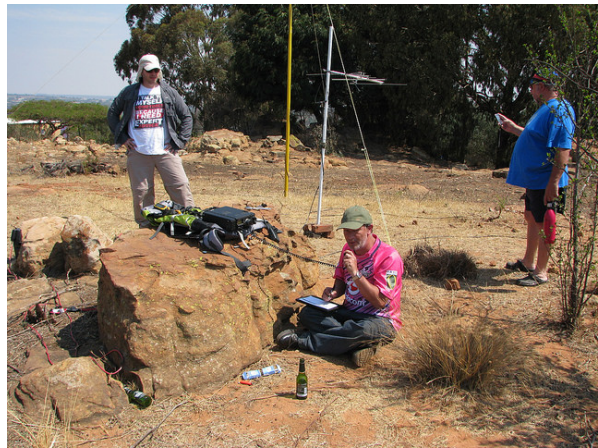
October QRP Contest Results for Ultra-Light Stations : Theo (ZS6TVB) – 396 points ; Jaco (ZR6CMG) – 276 points

CQ Hou Koers 18th October 2014

Saterdag 18 Oktober het 'n paar van ons klublede kommunikasie verskaf aan die Voortrekkers tydens die se jaarliks CQ Hou Koers dag. Rudi ZS6RVD, Theo ZS6TVB en Juan ZS6VDJ was saam met Arbeidsvreugde Kommando in Pretoria Noord, terwyl Pierre ZS6PJH saam met die Sesmylspruit Kommando van Centurion was. Vanaf 08h00 was daar verskeie kinderstemme op die lug wat met Amateurs en ander Voorterkkers gesels het. Voortekker Kommando's van Sasolburg, Newcastle, Potchefstroom, Weltevredenpark, Kemptonpark, Polokwane en selfs Windhoek is gehoor op 40m. Daar was ook verskeie Scout groepe op die lug.

Alhowel 'n groot aantal van die Voortrekkers die vorige nag aan 'n deurnag vlotvaart op Roodplaat dam deelgeneem het, het die klompie wat na CQ Hou Koers gekom het, die geleentheid baie geniet en heelwat geleer van Radio kommunikasie. Baie van hulle het hul vrees vir die mikrofoon oorkom en lekker gesels.

Om 12:00 het verrigtinge tot 'n einde gekom, en was almal vroeg tuis vir 'n welverdiende rus kans. Ons sien almal uit na volgende jaar se CQ Hou Koers aktiwiteite.

Report by Pierre Holtzhausen ZS6PJH

Polokwane Rally 17 - 18th October 2014

The rally season is rapidly drawing to a close. With the Polokwane Rally done and dusted, two events remain, the BELA - BELA Rally on the 21&22 November (last national) and the Secunda Rally (regional) on the 29th of November 2014.

The Polokwane Rally was well organized and everything went like clockwork. Leroy Poulter and Elvene Coetzee won the event in their Toyota and in doing so they were also crowned as new National Champions and team honours went to the Castrol Toyota team. The communications were good and our sincere thanks to the custodians of the Wolkberg repeater for allowing us to make use of their repeater.

To the team: JB ZS6YV, Menno ZS6AGC, Ben ZR6BVB, Pieter ZS6CN, Willie ZR6WGR, Pierre ZS6ADZ, Louis ZS6SK and Graham ZS6GJR a big thank you for your assistance. In particular our sincere thanks to Chris Barnard ZS6CMB (Chief Marshal) for his contributions.

If you want to assist with radio communication on rallies please call me on 0793334107, or send an e-mail to zs6jhb@gmail.com, and I will gladly provide you with more information regarding rallies.

Report by Johan de Bruyn ZS6JHB

Resistance, Reactance and Impedance
By : Vincent Harrison ZS6BTY

If you remember studying for the RAE, you might recall the warning that, although the resistance (of a resistor) and the reactance (of an inductor or capacitor) are both measured in ohms, you cannot just add them together.

Further to that, the RAE manual tells you that

- the reactance of a capacitor is considered to be negative, and

- the reactance of an inductor is considered positive.

Let us spend some time on these two points:

A – that you cannot just add resistance and reactance

B – the reactance of inductors and capacitors have the opposite sign.

First, let us consider why capacitive reactance has the opposite sign to inductive reactance.

The secret lies in the relationship between the associated voltage and the current. We know that for capacitors and inductors, the current and the voltage are 90°out of phase. To help you to remember, the RAE manual tells you about the acronym "CIVIL".

The first three letters (C-I-V) remind you that in a capacitor (C) the current (I) comes before (leads) the voltage (V). The last three letters (V-I-L) tell you that the voltage (V) leads the current (I) in an inductor (L). Together they make up the acronym "C-I-V-I-L".

Thinking of the current-to-voltage relationship, you can see why inductive reactance is considered opposite to capacitive reactance. The currents and voltages behave in exactly the opposite manner! For capacitors the current is 90°ahead of the voltage, whereas in inductors, the voltage leads the current; as a result the reactances have the opposite signs. Inductance is positive and capacitance is negative.

For convenience, someone made the choice as to which one would be positive and which would be negative. It does not really matter which is which. All that matters is that they are opposite.

What is also important is that "opposite" means "180° apart". The one is +90° and the other is -90°, for a total of 180° between them.

Let's get back to why you cannot just add resistance and reactance. The reason lies in the difference between the current and voltage relationships of resistors and reactances. In a resistor, *V* and *I* are in phase. In other words, the phase difference is 0°. As we have just discussed, the phase difference is 90° for a capacitor or inductor.

What happens then, if you put an alternating current through a series connection of a resistor and a capacitor? Practically you can do that. What is the voltage across the series combination?

If you could just add the resistance to the reactance, then you could calculate the voltage from Ohms Law. But, as the RAE Manual warns, you cannot just do that.

Why not?

It is simply because the phase of voltage and current is different between a resistor and a reactance; the peak of the resistor voltage does not correspond to the peak of the capacitor voltage. In fact, the resistor voltage peaks at the point when the capacitor voltage is zero. They are 90° out of phase.

So how do you find the resulting voltage? You do it by adding them AT RIGHT ANGLES to each other. You can picture that by drawing a right angle triangle (see the figure below).

For example, suppose the current is 1 amp, the resistor is 50 Ω and the capacitor has a reactance of -25 Ω.

To represent the voltage across the resistor, first draw a horizontal line.

Make it 50 mm long using 1 mm for 1 volt (50 Ω x 1 amp = 50 volts).

What we have done here is to choose a direction for the current (horizontal) and because the resistor voltage is in phase with the current, the line representing it must also be horizontal.

How do we represent the voltage across the capacitor? It will be 25 V, but it is at right angles (i.e. at 90°) to the current. That means that it must be vertical, to be at right angles to both the current and the voltage across the resistor.

From the end of the horizontal line that represent the resistor voltage, draw a line 25 mm long, vertically DOWN towards the bottom of the page to represent the capacitors voltage. (With an inductor you would have drawn the line vertically UP).

The two lines you have drawn are two sides of a right angle triangle and they represent the resistor voltage (V_R) and the capacitor voltage (V_X). The total voltage (V_T) across the pair in series is represented by the line that joins the two open ends.

You can complete the triangle by joining the open ends of the vertical and horizontal lines and that solves your problem.
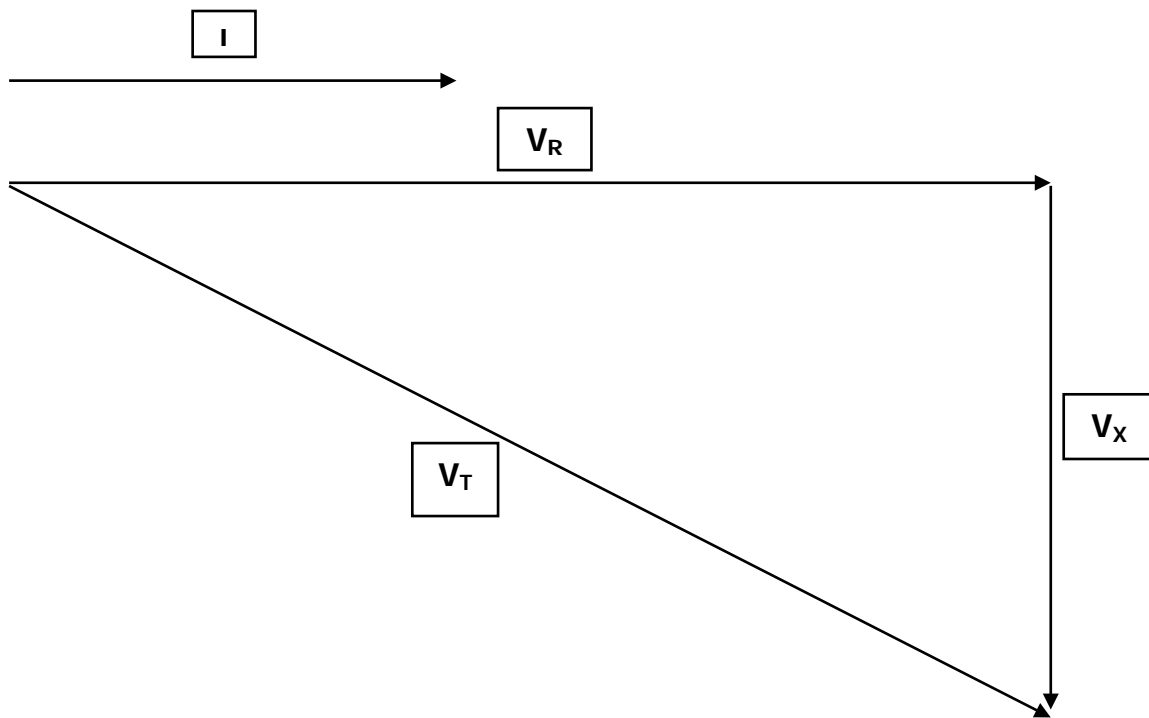
The voltage across the series resistor (R) and reactance (X) is the length of the long side of the triangle. In this case, it is about 56 mm long and if you remember your school mathematics, then you could calculate it exactly by Pythagoras's Theorum. (The square on the hypotenuse equals the sum of squares of the other two sides).

The length of the long side is the voltage. If you divide that by the current you have the impedance. Impedance is nothing other than the combination of resistance and reactance.

56 mm represent 56 volts, divided by 1 amp gives you an impedance $Z = 56$ ohms.

From this, you can see that the triangle representing the voltages also represents the resistance, reactance and total impedance of the series combination.

What is also apparent is that the line representing resistance is horizontal (call that 0°) and the line representing capacitance is vertically down (-90°). In this case the line representing the impedance is at -27°. (For an inductor it would have been at +27°).

The number of 56 Ω above does not fully represent the impedance. The length of the line represents 56 Ω, but the line is neither horizontal nor vertical. It is inclined at an angle of -27° and you need both the length and the angle to fully describe impedance.

We have seen that impedance has two parts to it, but there are also two ways to look at impedance. You can express impedance as the length (56 mm) and angle (- 27°) of the long side of the triangle, or you can express it as by the other two sides, R and X. We write that as $Z = R + jX$ and the "j" simply means that the two lines are at right angles to each other.

These are the two ways of looking at impedance: either length (magnitude) and angle or resistance and reactance.

R

X

Z
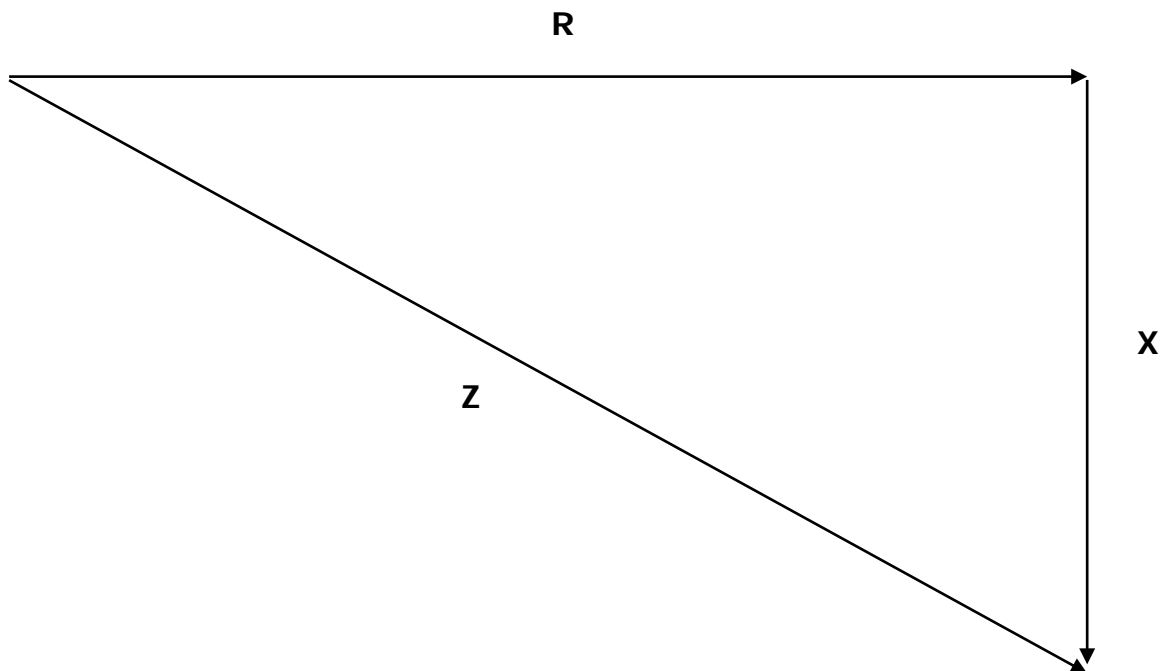
The nicest thing about the future is that it always starts tomorrow

Money will buy a fine dog but only kindness will make him wag his tail

A good time to keep your mouth shut is when your'e in deep water

Stroke a cat and you will have a permanent job

No one has more driving ambition than a teenage boy who wants to buy a car

There are no new sins; the old ones just get more publicity

No one ever says "It's only a game" when their team is winning

Do you realize that in about 40 years, we'll have thousands of old ladies running around with tattoos?

After 60, if you don't wake up aching in every joint, you're probably dead

Hans ZS6KR

Pretoria Critical Frequency and 4000 km MUF – November 2014
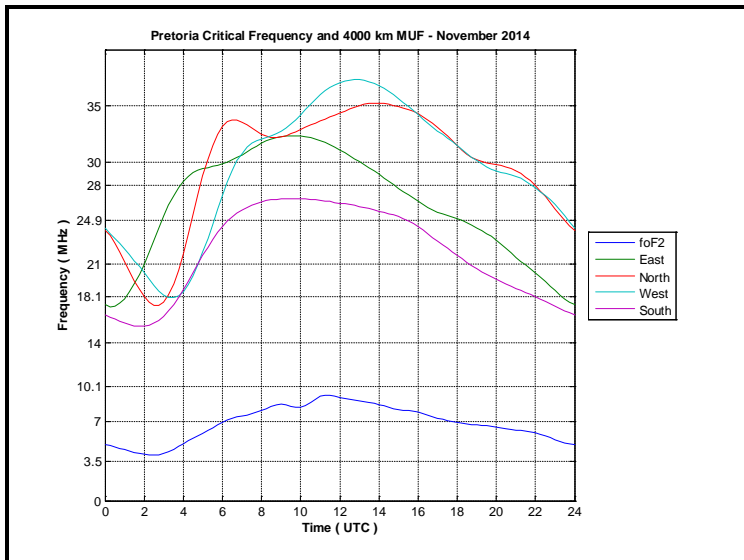
Long Term HF Propagation for November 2014

DX Operating

The graph shows the 4000 km maximum useable frequency (MUF) to the East, North, West and South from Pretoria for the first hop using the F2 layer.

Local Operating

The F2 critical frequency (foF2) is the maximum F-layer frequency for short range communications.

See also the Propagation tab at http://www.parc.org.za/

Courtesy Vincent ZS6BTY

Amateur Radio Hall of Fame

David Brown, Kalpana Chawla and Laurel Clark were crew members of STS 107, which was the 113th flight of the Space Shuttle Program, and the disastrous final flight of the Space Shuttle *Columbia*. During their mission, launched on the 16th of January 2003, the astronauts spend 16 days in orbit, conducting various international scientific experiments. During re-entry into the atmosphere, the entire crew of STS 107 was killed when Columbia disintegrated. The Columbia Accident Investigation Board determined that the failure was caused by a piece of foam that broke off during launch and damaged the thermal protection system on the leading edge of the orbiter's left wing.

David M. Brown (KC5ZTC)   **Kalpana Chawla (KD5ESI)**   **Laurel B. Salton Clark (KC5ZSU)**

Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning. Albert Einstein (1879 – 1955)