Ragchew

"The Voice of Branch 68"

May 2016

The North Canterbury Amateur Radio Club Inc.
PO Box 14, Woodend 7641

www.ncarcinc.weebly.com

Meetings are held at the Woodend Youth Centre, unless otherwise advised.

QTH

CLUB CALENDAR

Meetings start at 1930hrs, unless otherwise stated.

Host for May - ZL3COL

May	12	General Meeting - **"Coastguard Service" by Daniel Clark**

Branch 01 Ashburton

May	9	Annual General Meeting **- ZL3ND is host**

Branch 05 Christchurch

May	4	General Meeting - **"A Musical Tesla Coil" by Dave ZL3FJ**
	19	Day meeting **(1300hrs)**

Branch 56 Christchurch West

May	11	Free & Easy **(1330hrs)**
	24	General Meeting

CARDS

May	18	General Meeting

Nets and Frequencies

Canterbury 2M SSB Net 144.200MHz every Tuesday from 2000hrs (vertical polarisation)

Canterbury 6M Net 3850 6M Repeater Thursdays from 2000hrs (vertical polarisation)

Canterbury Area Net 5625 Repeater, 2000hrs on Sundays

National Broadcast last Sunday of the month at 2000hrs on 3.900MHz, National System, 6975 and 705 Repeaters

Secretary: *Colin Rowe ZL3COL* ***Phone*** *03 313 2303* ***Email:*** *colingr@xtra.co.nz*
Editor: *Tony Buckland ZL3HAM* ***Phone*** *03 312 5352* ***Email:*** *zl3ham@scorch.co.nz*

President's Report

I have just participated in the first Ham Cram weekend held by Branch 05. I had the privilege of being able to tutor several subjects on both days.

We had 10 candidates, 7 of whom passed including the two young men I have been tutoring. Kimberly Tokin, who several members will know also passed. Congratulations to them all, I'm sure they're eagerly waiting on their callsigns to come through.

Make sure you register for conference to get the earlybird pricing, more details on the website, www.hamradio.co.nz. This has recently been updated

I will be away for the next general meeting in May so I will see you all in June.

73 Don ZL3DMC

AREC Report

26/27th March. National Equestrian Endurance
Geoff ZL3QR and myself (part time) assisted Br 05 with this event held at Brooksdale Station near Sheffield. Good weather and good organisation meant that the event went without a hitch. Several new technologies were tried by AREC at this event, and the Wi-Fi hotspot streaming results in real time was a great hit. The organisers have indicated that they will be using us again.

Upcoming Events:
Nothing in the immediate future.

AREC / FIRE REPORTS. – Committee Meeting – 28/4/16.

Forest Rural Fire: (AREC supplied Comms / Logistics to Forestry Fire Teams).

Mon. 18/4/16. One Forestry unit + NZFS to log slash fire within fire boundary of the Ashley Forest. Found to be a permitted burn and under control so no action required. This is a long term clearance operation with some weeks yet to run.

Don ZK9EG/ZL3DMC
Section Leader
Geoff ZL3QR
D/Section Leader

Repeater Reports

Mt. Noble 6975

Everything looked pretty good from Highway 1 as I went past on Wednesday. I was coming back from Nelson on my motorcycle. It was a lovely Autumn day and you could smell the poplars as they were preparing to drop their leaves.

Mike ZL3AKZ

Mt. Grey 675

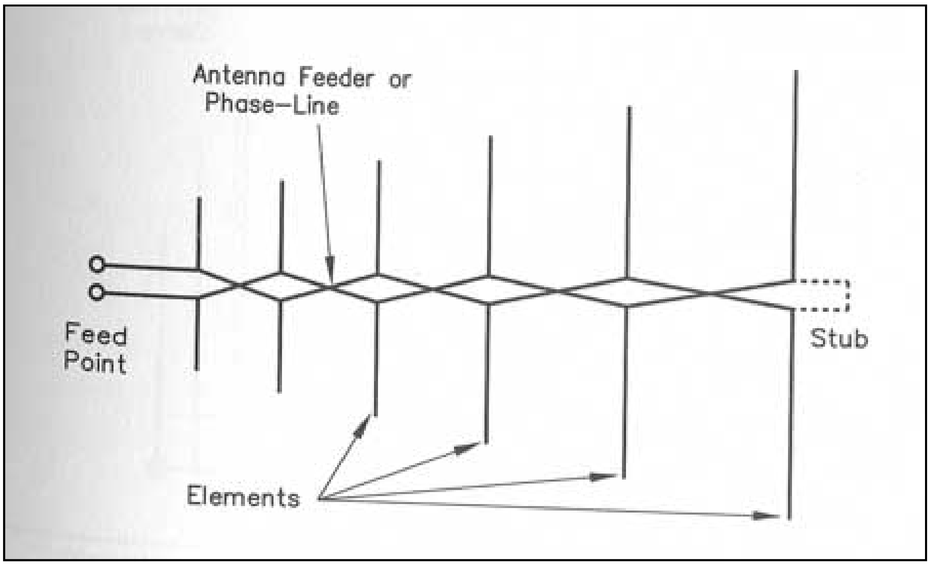
The repeater is working well with no known issues.

Geoff ZL3QR

Log-periodic antenna (LPDA)
(lifted from the Web)

A **log-periodic antenna** (**LP**), also known as a **log-periodic array** or **log-periodic aerial**, is a multi-element, directional, antenna designed to operate over a wide band of frequencies. It was invented by Dwight Isbell and Raymond DuHamel at the University of Illinois in 1958.

The most common form of log-periodic antenna is the **log-periodic dipole array** or **LPDA**, The LPDA consists of a number of half-wave dipole driven elements of gradually increasing length, each consisting of a pair of metal rods. The dipoles are mounted close together in a line, connected in parallel to the feedline with alternating phase. Electrically, it simulates a series of two or three-element Yagi antennas connected together, each set tuned to a different frequency.



LPDAs look somewhat similar to multi-element Yagi designs, but work in very different ways. Adding elements to a Yagi increases its directionality, or gain, while adding elements to a LPDA increases its frequency response, or bandwidth. Because both designs are linear, a widely used design for television reception combined a Yagi for UHF reception in front of a larger LDPA for VHF. These can be identified by the much smaller elements at the front, and often a V-shaped reflector between the two sections.

LPDA/Yagi combo antennas were very popular from the 1960s through the 1980s when television broadcasting moved largely to cable. The digital transition in the 2000s led to the retirement of the VHF frequencies for television use in most countries. Modern terrestrial television antennas are more often dedicated to UHF, and the bowtie array is more common today. In the United States, however, some stations remained on the VHF spectrum.

cont'd on page 4

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May Meeting

At the last meeting we saw a DVD of "FT5ZM Amsterdam Island DXpedition 2014".

This month's we have Daniel Craig giving us a talk on the "Coastguard Service".

May Happy Birthday's

None recorded for this month

cont'd from page 3

Basic concept

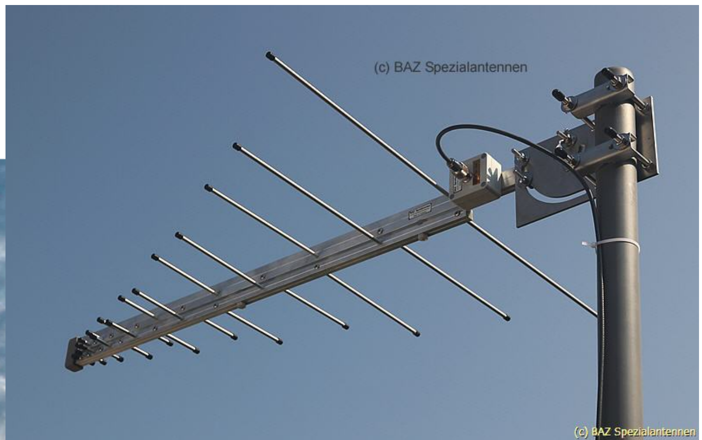
The LPDA normally consists of a series of dipoles known as "elements" positioned along a support boom lying along the antenna axis. The elements are spaced at intervals following a logarithmic function of the frequency, known as *d* or *sigma*. The length of the elements correspond to resonance at different frequencies within the antenna's overall bandwidth. This leads to a series of ever-shorter dipoles towards the "front" of the antenna. The relationship between the lengths is a function known as *tau*. The ever-decreasing lengths makes the LPDA look, when viewed from the top, like a triangle or arrow with the tip pointed in the direction of the peak radiation pattern. *Sigma* and *tau* are the key design elements of the LPDA design.

Every element in the LPDA design is "active", that is, connected electrically to the feedline along with the other elements, though at any one frequency most of the elements draw little current from it. Each successive element is connected in *opposite* phase to the active connection running as a transmission line along the boom. For that reason, that transmission line can often be seen zig-zagging across the support boom holding the elements. One common design ploy is to use two booms that also acts as the transmission line, mounting the dipoles on the alternate booms. Other forms of the log-periodic design replace the dipoles with the transmission line itself, forming the log-periodic zig-zag antenna. Many other forms using the transmission wire as the active element also exist.

The Yagi and the LPDA designs look very similar at first glance, as both consist of a number of dipole elements spaced out along a support boom. The Yagi, however, has only a single dipole connected to the transmission line, usually the second one from the back of the array. The other dipoles on the boom are passive elements, with their two sides shorted, acting as *directors* or *reflectors* depending on their slightly different lengths and position relative to the *driven element*. The difference between the LPDA and Yagi becomes obvious when examining their electrical connections; Yagi's lack the zig-zag connection between the elements. Another clear difference is the length of the dipoles; LPDA designs have much shorter dipoles towards the front of the antenna, forming a triangular shape as seen from the top, whereas the difference in lengths of Yagi elements is less noticeable or non-existent. Another visible difference is the spacing between the elements, which is normally constant in the Yagi, but becomes exponentially wider along the LPDA. Although both directional, the LPDA is intended to achieve a very wide bandwidth, whereas the Yagi has a very narrow bandwidth but achieves greater gain.

In general terms, the log-periodic design operates somewhat similar to a series of three-element Yagis, where each set of three consecutive elements forms a separate antenna with the driven element in the center, a director in front and reflector behind. However, the system is somewhat more complex than that, and all the elements contribute to some degree, so the gain for any given frequency is higher than a Yagi of the same dimensions as any one section of the log-periodic. However, it should also be noted that a Yagi with the same number of elements as a log-periodic would have *far* higher gain, as all of those elements are improving the gain of a single driven element. In its common use as a television antenna, it was common to combine a log-periodic design for VHF with a Yagi for UHF, with both halves being roughly equal in size. This resulted in much higher gain for UHF, typically on the order of 10 to 14 dB on the Yagi side and 6.5 dB for the log-periodic. But this extra gain was needed anyway in order to make up for a number of problems with UHF signals.

It should be strictly noted that the log-periodic shape, according to the IEEE definition, does not provide with broadband property for antennas. The broadband property of log-periodic antennas comes from its self-complementarity. Y. Mushiake found, for what he termed "the simplest self-complementary planar antenna," a driving point impedance of $\eta_0/2=188.4\Omega$ at frequencies well within its bandwidth limits.



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CALENDAR for 2016

General Meeting - *Second Thursday at 1930 (7.30pm)*

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-				12	9	14	11	8	13	11	8

Committee Meeting - *Fourth Thursday at 1930 (7.30pm)*

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				26	23	28	25	22	27	25	-

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