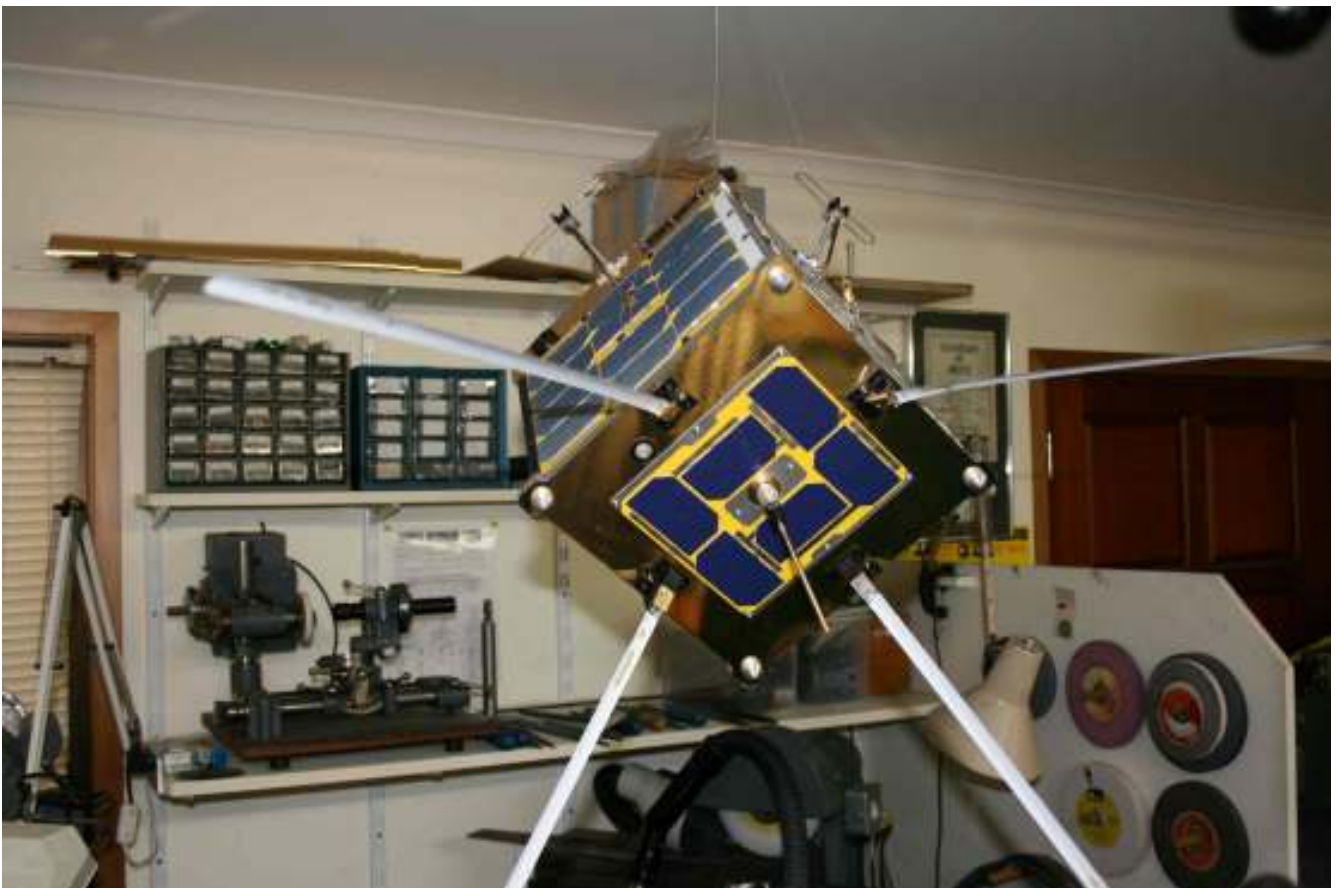


**The Official Newsletter of the  
Auckland VHF Group Inc.  
Spectrum 2007**



**KiwiSAT 70cm antenna for Climate Warming experiment**



# Auckland VHF Group Inc.

## Branch 66 NZART

PO Box 10138, Dominion Rd, Auckland 1446

Clubrooms: Hazel Ave, Mt Roskill

<http://www.qsl.net/zl1bq>

Office	Name	Callsign	Home	Work / Mobile	E-mail
President	Tim Moore	ZL1TN	534 9072	021 2732 429	<a href="mailto:tmoores@clear.net.nz">tmoores@clear.net.nz</a>
Vice President	Alan Holland	ZL1AWL	412 7659		<a href="mailto:zlawl@nzart.org.nz">zlawl@nzart.org.nz</a>
Secretary	Peter Bennett	ZL1UPB	078677269		<a href="mailto:pb@bencom.co.nz">pb@bencom.co.nz</a>
Treasurer	Doug Cooke	ZL1TTE	846 6075	0274 978 121	<a href="mailto:d-jcooke@ihug.co.nz">d-jcooke@ihug.co.nz</a>
Committee	John Dunn	ZL1JD	473 9514	021 731 907	<a href="mailto:john.dunn@clear.net.nz">john.dunn@clear.net.nz</a>
	Brian Farrell	ZL1HN	078434847	07 843 3146	<a href="mailto:bfarrell@clear.net.nz">bfarrell@clear.net.nz</a>
	Doug Cooke	ZL1TTE	846 6075	0274 978 121	<a href="mailto:d-jcooke@ihug.co.nz">d-jcooke@ihug.co.nz</a>
	Laurie Mathews	ZL1ICU	634 5130	0274 817 463	<a href="mailto:perma@xtra.co.nz">perma@xtra.co.nz</a>
	Grant Taylor	ZL1WTT		021 2340 270	<a href="mailto:zlwtt1@yahoo.com.au">zlwtt1@yahoo.com.au</a>
	Merv Thomas	ZL1SK	828 7174	0274 990 262	<a href="mailto:m.r.thomas@titan.co.nz">m.r.thomas@titan.co.nz</a>
AREC					
Acting Section Leader	Laurie Mathews	ZL1ICU	634 5130	0274 817 463	<a href="mailto:perma@xtra.co.nz">perma@xtra.co.nz</a>
Deputy Section					
ZL1BQ Trustee	Tim Moore	ZL1TN	534 9072	021 2732 429	<a href="mailto:tmoores@clear.net.nz">tmoores@clear.net.nz</a>
Repeater Trustee	John Dunn	ZL1JD	473 9514	021 731 907	<a href="mailto:john.dunn@clear.net.nz">john.dunn@clear.net.nz</a>
Klondyke Managers	ZL1TN, ZL1BK				
850/690 Manager	Dennis Seymour	ZL1UET	532 8666		
670 Manager	Vaughan Henderson	ZL1TGC	418 1071	373 5595	<a href="mailto:vaughanh@ww.co.nz">vaughanh@ww.co.nz</a>
ATV/Beacons	Quentin Foreman	ZL1QF	410 7236	021 264 7407	<a href="mailto:qsf@orcon.net.nz">qsf@orcon.net.nz</a>
	Wally Muzyka	ZL1VWM	360 3496		<a href="mailto:zl1vwm@xtra.co.nz">zl1vwm@xtra.co.nz</a>
Spectrum Editor	Ian Ashley	ZL1AOX	298 1810		<a href="mailto:iana@kcbbs.gen.nz">iana@kcbbs.gen.nz</a>
Trading Table	John Dunn	ZL1JD	473 9514		<a href="mailto:john.dunn@clear.net.nz">john.dunn@clear.net.nz</a>
BayCom	Doug Tennent	ZL1AVY	836 8206		<a href="mailto:zlvay@nzart.org.nz">zlvay@nzart.org.nz</a>
Hon Auditor	Peter Loveridge	ZL1UKG	377 3398	481 0544	<a href="mailto:peterlov@ihug.co.nz">peterlov@ihug.co.nz</a>

Club Web Page

<http://www.qsl.net/zl1bq>

ATV Interest Group

<http://www.qsl.net/zl1qf/atvug/ATVusers.html>

### Club News and Net:

The combined Auckland VHF Group and Auckland Regional Branch News and Net are held on 146.625 MHz and 439.875 MHz at 8.15 pm each Sunday or after the ZL6A National Broadcast on the last Sunday of the month.

Club meetings are held at the Clubrooms at Hazel Avenue, on the second Monday of each month at 7.30 pm. For other details, listen to the News and Net each Sunday evening.

Membership of the Auckland VHF Group is via subscription; \$30 within the Auckland free dialling area, and \$25 outside. It is expected that members of the Auckland VHF Group Inc. are also members of NZART, as we are branch number 66 of NZART.

**SPECTRUM** is the official journal of the Auckland VHF Group Inc.

Opinions expressed are those of the authors and do not necessarily reflect club points of view. The closing date for SPECTRUM articles is the Monday 7 days before the following General Meeting. Articles may be submitted to the Editor.

## Coming Events:

**NOTE the change to the SECOND MONDAY of the month.**

**November 12<sup>th</sup> at 19:30: AGM followed by a Video of the Peter 1 Island DxPedition.**

**December:** End of year Bash.

## Contents

KiwiSAT 70cm antenna for Climate Warming experiment	1
Club News and Net:	2
Coming Events:	3
Contents	3
Contest Calendar:	3
Presidents Report 2007	3
News & Net control operators:	5
Annual Report Auckland VHF Group Secretary 2007	5
Annual Report Auckland VHF Group Webmaster.	5
AREC Report	6
Repeater Trustee Report 2007.	6
Trading Table Report 2007.	7
AREC training seminar	8
Spring VHF/UHF Field Day - Saturday 17th November and Sunday 18th November	8
KiwiSAT update November 2007	8
UHF Report from Stephen ZL1TPH	10
25 years ago VK was worked on 1296 MHZ	10
Peter 1 Island	10
Delfi-C3 Satellite	12
DRAFT - Memorandum of Understanding	13
For Sale from the Trading Table (Ex estate of ZL1MO)	20
ANNUAL GENERAL MEETING	20

## Contest Calendar:

**December 1<sup>st</sup> and 2<sup>nd</sup>: Field Day Contest.**

**Contest times:** For all contests, the operating periods are 1700 to 2300 on the Saturday, and 0700 to 1300 on the Sunday, NZ local Time.

\*\*\*\*\*

## Presidents Report 2007

The club stumbled into 2007 without nominations for Secretary, Treasurer and Spectrum Editor. The members should be

thankful that ZL1UPB, ZL1TTE and ZL1AOX generously volunteered to fill these positions and have assisted us through the 2007 year.

The Christmas social and January barbeque were well attended and were used to search for the above mentioned unfilled positions. There was plenty of good discussion and many ideas that were put forward from the members who were present, many of these ideas still needed some discussion, which happened at committee. In February we held our Special general meeting, to discuss the future directions of the group, and finalise the remaining positions that needed to be filled, and I was pleased to report that we have been able to fill those positions. Peter, ZL1UPB, our new Secretary, agreed to do some web design, and update the VHF Group's website.

At our March general meeting, we heard from Grant, ZL1WTT talking about digital radio, and his experiments to date with excimers. Grant has been very active on the bands over the years, and he has been at the forefront of the development of our ATV repeaters.



April was a practical and swap meeting. The VHF Technology convention in Wellington was well supported by our members and there were forums on everything from the upgrades to the Air Force Orion aircraft to digital TV, digital modes, repeaters, Amateur Satellites, including KiwiSAT, D-Star and new higher bit rate digital modulation, software defined radio. A small group of us met up at Klondyke on Anzac day to check out a few things and have a

look at things up the tower, and check out a few other areas, including batteries. Most things around the site are in good order, but there were a few things that will need further attention, such as painting a few bits on the tower. We ran out of time up at the site, and only Laurie, ZL1ICU, and I made it up the tower. It was a fine, windless day, and when you're at the top of the tower, about 37m above firmer terror, you can appreciate a calm day.

At the May meeting we dealt with Conference remit and then had a video of our 2006 50th anniversary celebrations. During the month there have been a few issues come up, and were dealt with. Many of you will know about the proposed GURL for repeaters, beacons and fixed links, this is one topic that was discussed for over an hour, where the advantages and disadvantages were weighed up, and it was decided that to adopt the GURL approach and have our licence and frequency details removed from the MED's database would be significantly detrimental to our operation and may result in us being unable to site Amateur repeaters, beacons or links at commercially owned, multi-operator sites.

The June meeting at Digital Video Technologies in Penrose was very well supported, with around 20 members present. The evening provided a chance to look at up and coming technologies from cameras, both standard definition (SD) and high definition (HD), to recording systems and storage and editing systems, which are now almost done solely on computer systems, and for a fraction of the cost when compared to editing systems say 5 or 10 years ago.

July meeting, the meal and movie in Avondale was well attended; the roast dinner was well worth it, a good hot kiwi roast with good company. The movie "The Enigma Code" set in WW2, around England's Bletchley Park, was shown on the big screen in the mini cinema, after a short British comedy that dates back to the old 405 line B&W days.

It was a good evening to catch up with each other and those that we don't see that often. Those who came made the evening such a success I'm sure we will repeat it again next year.

August we were once again at the clubrooms for our monthly meeting, and were lucky

enough to have a talk about the new FreeView, the new digital free-to-air TV service which carries most of our free-to-air services currently available on the analogue VHF and UHF channels. The FreeView digital TV service is currently delivered via the Optus D1 satellite on Ku band (12GHz) only, but towards the end of this year, or early next year, FreeView will also be delivered via a network of terrestrial DVB-T transmitters in the existing UHF TV bands from sites such as Waiatarua. To date, it has been suggested that any new High Definition TV (HDTV) programming will only be delivered via the terrestrial network.

September meeting at the clubrooms, the topic of the evening will be looked at the various projects that the Auckland VHF Group is working on, and investigated new projects on which to embark. There were plenty of things on the go at present, from upgrades to the ZL1BQ channel 39 ATV repeater, our 2m, 70cm and 23 cm voice repeaters, including the National System, to beacons from 6m to 3.4 GHz, APRS infrastructure, data projects such as microwave 2Mbps link for Klondyke, linked into a D-Star system. Among the things discussed was the future of the 146.900 2m repeater that was unfortunately destroyed by fire, along with everything in the Telecom owned building in which it was housed. It is very likely that insurance will cover the replacement of the repeater equipment, so replacing the repeater is not likely to be the main issue, but things like possible relocation of this repeater.

October meeting was a social event following the success of the meal and movie. I will not be in a position to attend because of a move to Queensland, Australia. I have received an employment offer that provides for significant advancement from where I am currently, and the money & conditions is significantly better what I'm currently getting, and am likely to get if I stay where I am.

I am likely to be travelling over during the first week of October, to start work on October 8th. I thank you all for your support over the last 3 years, I think that we have recently made some changes that have benefited the Group, such as changing the general meeting night, with what has been a significantly increased attendance at

meetings, and I thank everyone for the hard work organising our meetings, and keeping us running during this time. We have come a long way, I think I leave the group in a sound financial condition and there is plenty of work to do in the future so all of you remaining get together and make it work.

73,  
Tim Moore ZL1TN.

\*\*\*\*\*

**News & Net control operators:**

November: John ZL1JD  
December: Laurie ZL1ICU

\*\*\*\*\*

**Annual Report Auckland VHF Group Secretary 2007**

It has been a pleasure serving as the Secretary of the Auckland VHF Group for 2007. After hearing of the need for someone to fill the position after the 2006 AGM I offered to take up the role.

It has been a fruitful year and the VHF Group committee has worked hard to ensure the smooth running of the group's affairs. Throughout the year there have been interesting presentations at club meetings and I was pleased to organize the Free View and Informal Get Together evenings.

During my term I have visited the Klondyke repeater site twice to tend to the grounds. I was very impressed with the installation and it is certainly a fine asset for all in the region. The Hamilton sale was another highlight and many thanks to all those who helped with this.

My duties as Secretary were greatly assisted by committee. Collecting the mail twice a month did not create any problems. Several letters of thanks were produced during the year in response to kind donations. Meeting minutes have been published in Spectrum and also on the web site.

Although I am standing down after my short term as Secretary I will still be involved with the group's web site and hope to attend some future meetings where I can.

73  
Peter Bennett  
Secretary Auckland VHF Group.

**Annual Report Auckland VHF Group Webmaster.**

After noting that the VHF Group Web site was in need of modernizing I offered to take up this challenge. After a few weeks of trying several different formats I finally decided on a layout. New content was merged with existing information and the new web site was created. The web site is hosted by qsl.net and uses plain html and simple style sheets. This allows for a consistent layout and although basic it forms a good base to work from.

News articles are regularly updated and Spectrum is published on the site one month after it is sent out to members. Information on club activities, a repeater listing and contact details for club officials feature. There are links to several related forums that many of the group's members are involved with.

There are several challenges with maintaining the web site. The main one, as the Spectrum editor knows, is new and interesting content. There is only so much that I can do as Webmaster and the rest is up to club members to provide material. I can do a lot with simple text and pictures and club members are most welcome to submit anything that they find interesting.

There are three areas that will be advanced over the next financial year; these being a page for AREC activities, an examination page and more links to sites created by club members.

73  
Peter Bennett  
Webmaster Auckland VHF Group.

## **AREC Report**

This year has been rather eventful, for me having been elected as deputy section leader at the last AGM & ending up as section leader with the resignation of Daniel.

During this year VHF Group members have taken part in several operations.

Some 11 members took part in the Rally of NZ & we have also recently provided communications for the Auckland Heritage Walks.

We have worked out a memorandum of understanding with Auckland City Council Civil Defence Department which will have many advantages for the group including reimbursement for the rent on the land the clubhouse stands on.

Work in future will be setting up our clubrooms as back up for Auckland Civil Defence.

Members of the group will be attending the national training day at Papakura on 10th November 2007.

I am at present recompiling our membership list.

Any one wanting to join branch 66 AREC can contact me at (09) 634 5130

or email [perma@xtra.co.nz](mailto:perma@xtra.co.nz)

Existing members should also contact me to up date the records.

Laurie Mathews  
ZL1ICU

## **Repeater Trustee Report 2007.**

The repeater equipment owned by the Group has generally performed throughout the year without too much trouble. The worst incident was the demise of 690 in the fire on Puketutu in the early hours of August 19<sup>th</sup>. We lost the entire 690 repeater system. An insurance claim has gone in for replacement of the equipment, and at the time of writing this report, we are still waiting for the outcome with our insurers.

Meanwhile the STSP repeater has been re-crystallised for 690, and as we write this report, filters are being aligned and the necessary

equipment being prepared for a temporarily 690 repeater. Because the old site is not useable at present, Ian ZL1AOX has generously offered to house the equipment at his QTH until the future of the original site is determined.

A working bee was held at Klondyke in March of this year, and another one attempted on Labour Day in October. Unfortunately the October weather did not allow for much to be done. Some more working bees are planned during the better weather over summer.

One of the items raising concern at Klondyke is the age and condition of the batteries. Recent power failures at the site have given clear indication that some of the cells are not up to the storage capacity they should be. A plan to replace these batteries has been put into place and hopefully will be completed over the coming summer maintenance period.

Two significant problems developed at Klondyke over the year. One affected the receive input to 6625 when a VCO became unstable, which turned out to be a faulty capacitor in the VCO itself. The other problem was an interference issue from external signals when a combination which included the 2 meter data repeater came on. This was cured temporarily by reducing the power output of the data repeater, though the fault itself appeared to be generated from sources outside of our site. It appears the external problem has now been fixed, but we are being cautious before returning the data repeater back to normal power level.

About the time this report is being written, the IRLP node should be operational on 670. The generosity of one of our members means a site with internet access has been found, the equipment re-built, tested, installed and put to air. This has been a service that has been lacking a home for some time. Our thanks to Ian ZL1TOQ in voluntarily helping to solve this problem.

Our thanks must go to those hardy soles that trundle around various parts of the region seeking out those illegal phone systems that continue to pop up from time to time. Earlier

in the year several were found, and we have to say that the RSM certainly jumped to it once the location of these illegal units is pin-pointed. Well done Guys.

Currently the 1296 repeater is undergoing repairs and is off the air. It is a shame that this band is not used more, but hopefully projects involving digital radio techniques will foster a greater use of these frequencies and populate the space in the future.

Many thanks must go to the trustees, site managers and volunteers who have kept things going for the benefit of all users of the various repeater systems. Harry ZLIBK & Colin ZLIACM, along with assistance from many others, have done a sterling job. It is not easy when they know there is a fault that should be attended to, but have to drive miles to get to it, and at times when they have had a long day at work and would rather be at home doing their own thing. To these dedicated people, on behalf of all the users, we must say many many thanks for the time and effort, and to a job well done. Without their dedication we would not have the facilities available to us that we have today.

*I Move that the report be accepted*

ZL1JD

### **Trading Table Report 2007.**

This year has been a steady one for trading table activity. Again it has not been as active as I would have liked due to other commitments, but never-the less has continued to contribute to the expenses of the Group.

The sale of individual component stock has continued to drop away due to the lack of local construction projects that are being undertaken within the amateur community. Even trundling the full trading table to Hamilton this year again resulted in a very small quantity of component sales that really did not make the effort involved worth while. More income was being generated from larger second hand items. This trend was very evident when we again acquired more Audio and Video distribution

amps for sale. The turnover of these items has been reasonably rapid and profitable to the group.

The estate of Irving ZL1MO gave us the opportunity to display and sell at two other previously untried venues. The first was again in Hamilton at the newly formed Radio and Electronics club sale which was in place of the Cambridge Radio sale, which did not happen this year. The other occasion was the Western Suburbs Radio sale, which has now become the only Auckland venue for such opportunities. In both cases, sales on the day were very poor, but enquiries afterwards resulted in sales to make up for the poor results on the day.

August was Hamilton once again, where we had quite a reasonable turnover in sales making the trip well worth while, except for the individual components as mentioned above. I would recommend that next year we look at building up the special items to attract the buyers and take only a small selection of high demand components.

Vaughan ZL1TGC also took stock North to the Whangarei Branch for their celebration weekend, and had a reasonable return from the sale of items there.

There is not very much of the ZL1MO estate remaining. These items can be cleaned up at upcoming opportunities, and via "Trade-me". Once they have been sold a donation can be made to Mary-Anne Spackman as a gesture of thanks.

Finally my thanks go to all those who assisted in some way to the successes we have had this year. In particular Dave ZL1TIA for the use of his vehicle to transport gear to Hamilton, Peter ZL1UKG, Vaughan ZL1TGC, Alan ZL1AWL and all those that came along and helped on the day. Your efforts are appreciated.

*I move that this report be accepted.*

John Dunn ZL1JD

## AREC training seminar

Hi everyone

There will be an AREC training seminar on Saturday November 10 at Papakura Radio Club Rooms Wellington Park, Great South Road, Papakura.

It will be an all day affair starting at 0830 finishing at around 1700. Lunch plus morning and afternoon tea will be provided.

Updated copies of the AREC Manual will be distributed at the meeting.

To be of any use, AREC operators need to be well prepared, both in regard to equipment and also procedure and knowledge of the underlying systems. This training update is necessary for all operators to ensure we remain current with the latest CD and LandSAR requirements.

Can the Auckland Area Branch Section Leaders please advise numbers and names that will attend from each Section ASAP to the AREC Area Manager Richard Gamble,

[richard.gamble@slingshot.co.nz](mailto:richard.gamble@slingshot.co.nz)  
so that planning can be completed.

Remember every operator that wishes to be an active AREC member should attend this training session.

Regards

David Wilkins ZL1MR  
Secretary Auckland AREC  
PO Box 72-117  
Papakura 2244  
New Zealand  
Mb: +64 (21) 685 847  
Ph: +64 (9) 299 9346

## Spring VHF/UHF Field Day - Saturday 17th November and Sunday 18th November

The Spring VHF/UHF contest is on Saturday and Sunday November 17, 18 from Mt Warrawolong. There is still some planning to be done in regards to masting and antennas to be erected and radios to be used but the team hopes to be active on all bands from 6m to 10cm and invite all interested members to

come along and join them for a fun, amateur radio weekend. The site is 4WD access only, but a sedan can access the base of the mountain into the locked-off section of the track so members not having 4WD should not let this deter them from attending. People wishing to attend should contact Peter VK2TPK or use the [web form](#) to send them a message.

(Actual operating times unknown. Ed.)

\*\*\*\*\*

## KiwiSAT update November 2007

Good progress has been made over the past months in the construction and testing of various modules for KiwiSAT.

Originally designed by Terry (ZL2BAC), the Tx/Rx design was re-worked by Dr. Phil Wakeman of TMD Consultants in Auckland. Phil has completed the linear transponders (flight and flight spare units) and are undergoing testing at present.

All the units will be tested in the Thermal High-Vacuum tank at Massey University at Albany

The unit pictured below is the L band converter mounted into its housing ready for integration into the frame of the satellite.



In the photo below is Professor John Henderson using a spectrometer attached to the Thermal Vacuum chamber which is used to check for the type of impurities which may "outgas" from electronic and mechanical components under high vacuum and temperatures.



When our Project Leader, Fred Kennedy attended the Asian Small Satellites Conference as a guest speaker, he entered into discussion with a representative from Astrium regarding the possibility of flying a beacon in the 70cm band which could be used to detect anomalies in the ionosphere which can provide information as to how “climate change” is affecting the ionosphere.

A review of the design was made and found that a low power beacon could be incorporated into the design of KiwiSAT, and the result is the photo on the cover showing the added 70cm whip in the bottom centre of the satellite.

**Astrium** is a wholly owned subsidiary of EADS, a global leader in aerospace, defence and related services.

Number 1 in Europe and no. 3 worldwide, Astrium employs 12,000 men and women in five countries: France, Germany, the UK, Spain and the Netherlands.

Fred has also built a clean room at the Albany campus, which will be used in the integration of KiwiSAT. This is now working and has two large filters cleaning the air blown into the “clean” area. It is hoped that TV and other media will be able to record progress of the assembly of the satellite next year.



This is one of three GPS receivers we have available to fly on KiwiSAT.

## UHF Report from Stephen ZL1TPH

I see no contest results for the Microwave contest last month so here is my brief report if only to inspire more activity in VHF FD in one month's time.

In the Microwave contest I arranged a contact with Ted ZL1IP in Taranaki at 360 km distance. May not seem far to overseas distances achieved but this is New Zealand. On the Sunday and up at the Brynderwyn's lookout and could hear the Wellington 144.275 beacon at 600 km. The band was open and Ted was 5/7 on 10GHz (10368 MHz) and an easy contact 3 times with no headphones.

I got caught out here with little gear as I was expecting conditions to be flat and took no 1296 gear despite Ray and Ted looking for contacts. Lesson to be learnt there. Always take the gear. Some good contacts from just South of me on 1296 into the Taranaki area. Activity was there and so were the good conditions.

I moved down to Moirs hill and had a contact with Simon and Harry on 3.4GHz to promote that band and called it a day. Not a big event but a couple more contacts in the log.

73 Steve ZL1TPH (The Next Contest below)

### Field Day Contest

All bands 50 MHz and up. First Saturday in December, and the following day.

## 25 years ago VK was worked on 1296 MHz

What's happened since .... Nothing! Hopefully that will all have changed by the end of this season and VK will have been worked on 2424MHz or some higher band. I know there are many Amateurs working towards achieving this new milestone. Let's crack it guys.

73's

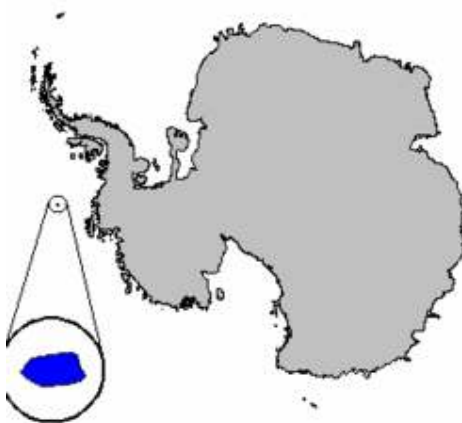
Brian ZL1AVZ

## Peter 1 Island

Peter I Island (in Norwegian Peter I.s øy) is a volcanic island located near Antarctica. It was discovered by Fabian von Bellingshausen off West Antarctica on January 21, 1821. It takes its name after the Russian emperor Peter I. Ola Olstad made the first successful landing on February 2, 1929 and claimed the island for Norway. The other Antarctic territory claimed by Norway is Queen Maud Land. Peter I Island is the only Antarctic claim area under the Antarctic Treaty that is not a sector.

The island has an area of 243 km<sup>2</sup> and reaches a height of 1755 metres on Lars Christensen Peak, which is a volcano. It is not known whether it is extinct or not, for the upper part is apparently unmodified by glaciation. It lies approximately 450 km from Eights Coast. It is surrounded by pack ice except for a brief period in late summer, and is 95% glaciated.

The amateur radio prefix for the island is 3Y, and the island hosts an occasional DX-pedition. As one of the most difficult entities to contact for the popular DX Century Club award, these generate intense levels of traffic.



Coordinates;  
68 degrees, 50 mins South,  
90 degrees, 35 mins west.

### Aerial View of Peter 1 Island



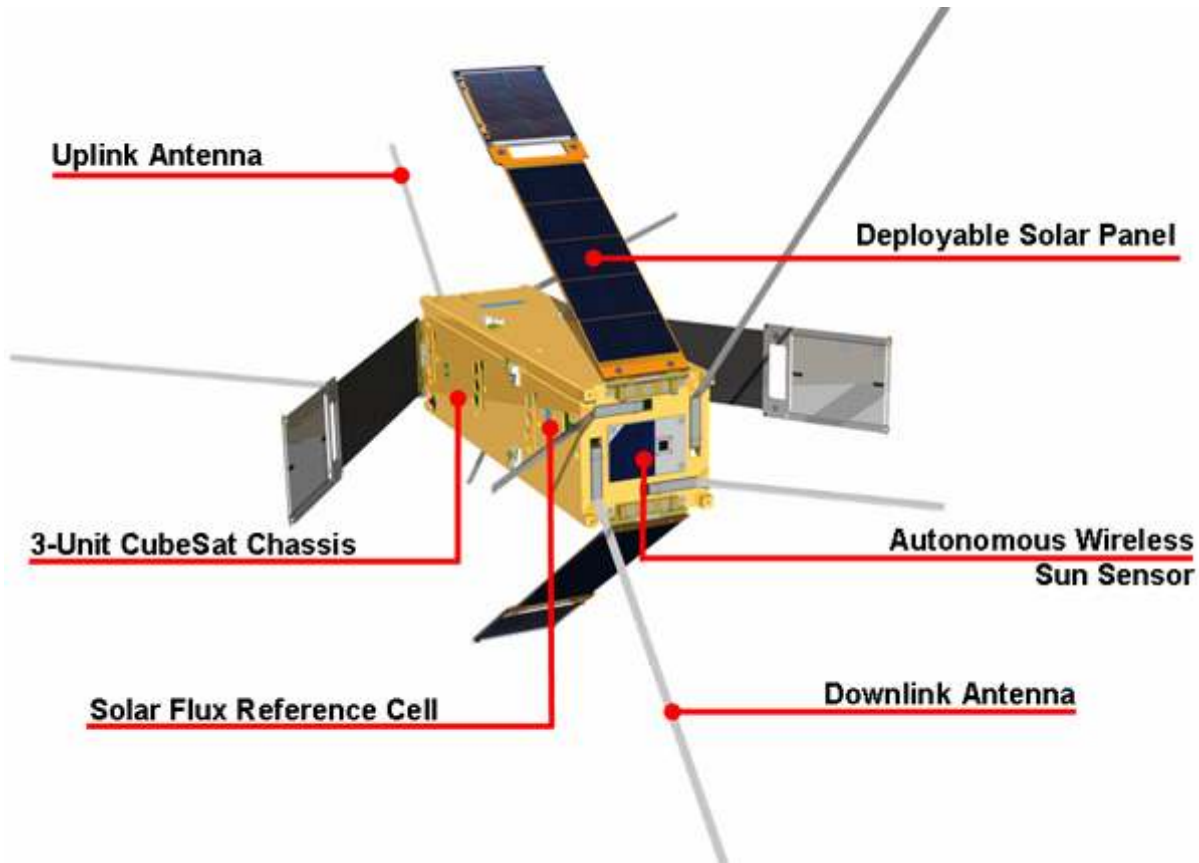
Afternoon glow of OP B shelter



We were very thankful to have a nice day to make the group photos.

## Delfi-C3 Satellite

The Delfi-C3 satellite will fly in this configuration: Planned to launch January 2008



modulation, using the amateur standard AX.25 protocol. Telemetry is encoded in UI frames. The COMMS consists of two systems, the Advanced Transceiver (ATRX) payload and a

A satellite is made up of the satellite bus and the payloads. The satellite bus contains the different sub-systems which will facilitate the payloads during its operation. The payloads of a satellite are the subsystems of the satellite which will perform the task for which the satellite was designed, in our case the experiments.

### COMMS (Communication Subsystem)

The communications subsystem (COMMS) will perform two functions. Firstly, it will provide the telemetry downlink and tele-command uplink functionality. Besides that, it will provide a linear transponder service which can be used by amateur radio operators to communicate with each other. The satellite will have an uplink in the satellite segment of the UHF amateur radio frequency band (435-438 MHz) and a downlink in the satellite segment of the VHF amateur radio frequency band (145.8-146 MHz). Telemetry downlink will be done using 1200 bit/s BPSK

so-called Radio Amateur Platform. The Advanced Transceiver payload will be discussed in section VI. The Radio Amateur Platform functions as a backup option for the Advanced Transceiver. It is built using standard commercial-off-the-shelf (COTS) components, providing the same telemetry, tele-command and additionally the linear transponder functionality. The linear transponder will relay a 40 KHz wide passband from the UHF band to the VHF band. This provides a very flexible system, which can be used by amateur radio operators worldwide using CW, SSB and PSK31 modulation. The antenna subsystem consists of a two canted turnstile arrangements, one for each band. The antennas are fed in phase quadrature in order to achieve the desired pattern and polarization by means of a phasing circuit, which connects to both transceivers.

# **DRAFT - Memorandum of Understanding**

between

**Auckland City Council**

and

**Amateur Radio Emergency Communications Section of  
the Auckland VHF Group,  
Branch 66 of the New Zealand Association of Radio Transmitters Inc.**

## **1. INTENTION OF THE PARTIES**

This agreement is for the purposes of facilitating support (see Schedule 1) to Auckland City Council by the Auckland VHF Group's Amateur Radio Emergency Communications (AREC) Section. This support is intended primarily to render assistance during a Civil Defence Emergency within the Auckland City district, but may, with the mutual consent of the parties, also extend to support being provided:

- During a Civil Defence Emergency being declared for all or part of the area of the Auckland Civil Defence Emergency Management Group, when the declaration includes all or part of Auckland City.
- During a National Civil Defence Emergency.
- During planned exercises involving the parties.
- During Search and Rescue incidents (should the Auckland City EOC be the best place to coordinate the incident from).
- During public and sports events such as the Santa Parade and the Auckland Marathon.
- At any other time where the parties gain mutual benefit by working together.

## **2. TERM, AMENDMENT AND RENEWAL OF THIS AGREEMENT**

- 2.1 This agreement shall take effect upon execution by the parties.
- 2.2 This agreement shall remain in effect until superseded by mutual agreement between the parties, or cancelled by one party advising the other in writing.
- 2.3 This agreement may be amended from time to time by mutual agreement between the parties.



scheduled, to determine the level of support that can be provided. Such consultation shall not constitute a commitment of a specific level of support which shall always be provided on a best endeavours basis.

- 4.8 Provide opportunities for the training and familiarization of AREC Section personnel in the EOC as mutually agreed.
- 4.9 Share technical information, operational plans and such other information necessary for the effective conduct of this agreement.
- 4.10 Provide one VHF and one UHF Amateur Band transceiver. This equipment will be made available for use by trained AREC operators in the EOC for communication with amateur stations locally (via VHF and UHF repeaters and simplex) and nationally (via the UHF National System). Liaison with amateur stations may be used to arrange additional or relief operators for the EOC, or as an alternative means of communication. This equipment may also be used by Branch 66 AREC to operate section station ZL6EEA in the event the AREC National Communications Plan is activated.

**AREC Section, Auckland VHF Group will:**

- 4.11 Consult with Auckland City (see Schedule 2 for contact details) when a Civil Defence Emergency is contemplated or declared, or an exercise is scheduled, to determine the level of support that can be provided. Such consultation shall not constitute a commitment of a specific level of support which shall always be provided on a best endeavours basis.
- 4.12 Share technical information, operational plans and such other information necessary for the effective conduct of this agreement.
- 4.13 Provide an invoice annually for the payment regarding paragraph 4.4
- 4.14 Where any reimbursable costs (para 4.5 and 4.6) are incurred, prepare a consolidated claim for reimbursement by Auckland City Council and distribute the payment to individual AREC members as full and final settlement of all individual costs incurred by AREC personnel in the conduct of this agreement.
- 4.15 Maintain a call back list of AREC members to ensure the EOC requirement of three eight hour shifts can be maintained.
- 4.16 Will test and record test results for all radios in the EOC at agreed intervals. In conjunction with this testing, provide recommendations regarding improvements that may be able to made, in the form of a report.

4.17 The Auckland VHF Group will make available and maintain their clubrooms at Hazel Ave, Faulkner Park, Mt Roskill as back-up facility (to Bledisloe House) for radio communications during an emergency.

## **5. PERSONNEL & EQUIPMENT MANAGEMENT**

Auckland City personnel and equipment and AREC Section personnel and equipment shall at all times remain under the respective control and management of their parent bodies. However the parties agree that all personnel and equipment shall be deployed during a Civil Defence Emergency according to the priorities established by the Controller.

## **6. DISPUTES**

If either party believes there is a dispute concerning this agreement, that party shall promptly notify the other party in writing giving details of the dispute. If the dispute cannot be resolved within 10 working days by the persons nominated for implementing this agreement, it shall be referred to the following persons for resolution.

The Chief Executive, Auckland City Council  
The Northern Area Manager, Amateur Radio Emergency Communications.

## **7. ACCEPTANCE**

The undersigned accept the terms of this agreement on behalf of their respective party.

Laurie Matthews  
AREC Interim Section Leader

Date:

Jane Lodge  
Manager, EM Planning

Date:

## Schedule 1 – Nature and Level of Support provided by AREC Section

Note: The nature and level of support detailed does not commit AREC Section to its provision and all support provided will remain on a best endeavours basis.

### 1. Personnel

- a. **Radio Operators.** Trained personnel to operate radio communications equipment in the EOC. Operators will normally have completed the AREC training module on Civil Defence communications. Nominally, up to two operators per shift are contemplated and they would work according to the shift roster established at the time.
- b. **Communication Advisers.** Experienced personnel to advise the Controller on radio communication matters and assist with the management of the EOC Communications Centre. One adviser per shift is contemplated and they would work according to the shift roster established at the time.

### 2. Equipment

Nil

## Schedule 2 – Contact details (in priority order)

### 1. Auckland City

Name	Work	Home	Mobile	E-mail
Jane Lodge	307-6092	523-0304	027-475-2041	jane.lodge@aucklandcity.govt.nz
Jamie Richards	307-6040	524-2400	027-279-9864	jamie.richards@aucklandcity.govt.nz
Michael McQuillan	307-7540	418-2535	0274-972-214	
John Duthie	367-6929	480-6878	0274-924-387	
Cameron Parr	353-9699	473-0769	0274-941-495	

## 2. Amateur Radio Emergency Communications

Laurie Mathews Interim Section Leader	0274 817 463	634 5130	0274 817 463	<a href="mailto:perma@xtra.co.nz">perma@xtra.co.nz</a>
Doug Cooke (Section Member)	027 497 8121	846 6075	0274978121	<a href="mailto:d-jcooke@ihug.co.nz">d-jcooke@ihug.co.nz</a>
Richard Gamble (Area Manager)	021 729 270	537-1238	021 729 270	<a href="mailto:richard.gamble@panasonic.co.nz">richard.gamble@panasonic.co.nz</a>
Jeff Sayer (National Director)	027 450 8022	06 370 1245	027 450 8022	

## 3. Emergency Operations Centre (when manned)

EOC Comcen	3077-511	<a href="mailto:akleoc@aucklandcity.govt.nz">akleoc@aucklandcity.govt.nz</a>
HF Desk (c/s ZKNT 41)	373-6837	
Local VHF Desk (ES 135 - c/s Central)	307-7672	
Regional VHF Desk (ES 42 - c/s Region)	373-6139	
EOC Manager	307-6040	

## Schedule 3 – Revision History

Version	Date	Notes
1.0	1 August 2003	Initial Document
2.0	1 August 2005	Scheduled Review
3.0	1 September 2006	Review
4.0	8 March 2007	Review
5.0	4 October 2007	Review
5.1	7 November	Update Auckland VHF group contact list, spelling error.

Trading Table Specials – November 2007

MGF1302	Low noise GaAs FET Nf = 1.4dB @ 4GHz, 4dB @ 12Hz. [S.case]	\$15.00 each
BFR91	NS RF Amp. 5GHz 1.9dBnf @ 500MHz [S.case]	\$2.00 each
MPS5179	NS TO92 12V 50mA 200mW ft 2000MHz Nf 5.0dB [S.5.7] RF Transistor. Use in UHF/VHF amplifiers with collector currents in the 100 $\mu$ A to 30 mA range, and in low frequency drift, high output UHF oscillators.	\$0.50 each
MRF237	NS RF Pwr. VHF 4.0W 12V TO39 [S.5.8]	\$3.00 each
3SK73GR	Dual-Gate FET N-channel 30V 7mA [S.6.7]	\$1.50 each

**SMD RESISTORS – 10 per pack. Most are 1206 Format.**

Values in stock: 22, 33, 49, 100, 270, 330, 390, 510, 1k, 2k2, 68k 100k Ohms.

10 per  
packet.  
50c per  
packet  
10 per  
packet.  
50c per  
packet

**SMD CAPACITORS – 10 per pack. Most are 1206 Format**

NPO 50V working: 2.2pF, 6.8pF, 47pF, 68pF, 82pF, 270pF, 470pF  
63V working: 10pF, 100pF, 1nF, 10nF, 100nF  
10uF 25V electrolytic

**Kitsets:**

**VHF/UHF Preamplifier Kit.**

Parts, pcb and instructions to build a preamp for 2m, 70cm,  
Now includes instructions for using a SMD package transistor, e.g. the BFG67 in place of the BFR91A supplied with the kit.

\$18.00 each

**Moving Coil Meters - 500 $\mu$ A movement** with back lighting via separate terminals.

Two scales 0 – 30 and 0 – 100, plus a battery “replace/good” indication.  
Scale can be removed/reversed for different uses. A very versatile meter.

\$3.00 each

**Integrated Circuits**

**ZSM560 under voltage monitor IC's.** 4.6 volt threshold for 5 volt systems.

Spec sheet available on request. Packet of 5

\$2.00 per  
packet

**HEF4060B SMD IC's. and HEF4060BT** 14-stage ripple-carry binary counter/divider and oscillator. Spec sheets available on request.

\$1.00 each

**74HC74D SMD IC's** Dual D-type flip-flop with set and reset; positive- edge trigger. Spec sheets available on request.

\$1.00 each

**LM393D IC's** (SO8 package) and LM393DT Low Power Dual Voltage Comparators. Wide single supply voltage range or dual supplies: +2V to +36V or +/- 1V to +/- 18V. Spec sheets available on request.

\$0.50 each

**74LS38N IC's** Quad 2-Input NAND Buffer with Open-Collector Outputs. Still in original RS packets.

\$1.00 each

- GPS Receivers** – 12 channel GPS receivers in plastic dome mounting with DB9 Connector. RS232 output on pins 2,3 and 5 and power +ve 6-12V on pin 6. NMEA output sentences. \$120.00 each
- GPS Patch Antenna** – with Macom SO8 preamp 26dB @ 1.575 GHz, 1.15 dB NF. It still has 20dB gain @ 1.3GHz but the noise figure is rising a bit. Fitted with 3m of RG174 cable and MCX connector. No housing/case for patch antenna. \$10.00 each
- GPS Patch Antenna** – as above but in plastic case. Fitted with about 3m RG58 coax cable and SMA connector. \$20.00 each

**Mail Order accepted.** Please forward your mail orders to Auckland VHF Group, PO Box 10138, Dominion Road, Auckland. Or Email to john.dunn@clear.net.nz.

Please Note: For mail orders please add \$5.00 for packing and postage.

### For Sale from the Trading Table (Ex estate of ZL1MO)

Maker	Model	Description	Ticket
Kenwood	TH-D7A	Dual band Handheld + manual	\$400.00
Kenwood	TM 255A	2m multimode	\$450.00
Kenwood	TM 851A	70cm multimode	\$450.00
Kenwood	TR 7930	2m Mobile + mounting bracket	\$250.00
Sabtronics	8100	Frequency counter 100 MHz	\$75.00
TAPR	PSK-1	300 bps + manual	\$60.00
TAPR	PSK-1	1200 bps + manual	\$80.00
Uniden	UBC 100XL	16 channel Handheld scanner	\$125.00
Yaesu	709-R	70cm Handheld + extended manual	\$150.00
Yaesu	G-250	Rotator	\$300.00

NEW INTO STOCK – LIMITED NUMBERS – A/V Distribution Amplifiers.

Talia professional Audio/Video Distribution amplifiers in a single 1U rack unit. 75 ohm looping video input with 10 separate outputs, all on BNC connectors. Stereo balanced or unbalanced audio input (RTS Jack's) with 10 stereo outputs on RCA connectors. This will be the last of these.

Limited numbers available. \$40.00 each.

## AUCKLAND VHF GROUP BRANCH 66 OF NZART ANNUAL GENERAL MEETING

This is Official Notice that the Annual General Meeting of the above group will be held at the Clubrooms, Hazel Avenue, Mount Roskill, Auckland, on Monday the 12<sup>th</sup> of November 2007, commencing at 7.30pm. The presentation of reports and balance sheets will be made along with the election of officers for the following year.

NOTE that we will require a new President, Vice President and Secretary.