

Canberra Region Amateur Radio Club

AGM 2024 Repeater Report

Crarc operates and maintains 7 voice repeaters, 2 beacons and an APRS digipeater. These devices are spread over 3 sites, Mt Ginini, Bulls Head and our main site at Isaacs Ridge.

All repeaters are currently operational aside from the Isaacs Ridge 2m FM voice repeater, which has been off air for the entire year due to it suffering from co-site interference. More on that below.

Phil Longworth, vk1pl, leads the club's repeater work, assisted by the committee as required. A big thanks to Phil and everyone for their work and dedication to keeping our infrastructure operational. It's a lot of work, much of it highly technical and is done to a professional standard. Thanks everyone.

FM Voice Repeaters

Aside from the Isaacs 2m FM repeater, all other FM voice repeaters have operated continuously all year with no reported issues. The Isaacs 2m FM repeater is off air due to an interference product between our site and the Telstra site just over the ridge. Unfortunately there is no simple solution for this interference. The repeater group have been experimenting with a non-standard frequency split and initial testing is positive, but we have more work to do before we make a decision on whether this is a practical solution.

Digital Repeaters

D-Star

The club's D-Star repeater on Isaacs Ridge has been operating well all year. It does suffer a little from an interference issue with the Internet link (more on that below) but overall has been performing well.

DMR

The club's DMR repeater however has had a raft of issues over the past year. The original DMR repeater was a Motorola DR3000, but this suffered multiple PA and exciter failures culminating in it being retired and replaced with a Tait TB8100 repeater and MMDVM modem on a Raspberry Pi. This performed reasonably well, however it seemed to have a partial failure in the modem component whenever there was a nearby lightning strike. This required several trips up the hill to power cycle the Pi to restore service.

In late November the repeater also started to suffer from some odd interference at random times that manifested as interstate stations being spoofed to appear as local stations for short transmissions and were re-transmitted back into the network. This caused a number of other nodes around the country in the DMR network to lock up requiring power cycling to bring back. Despite a fair bit of effort we have been unable to track down this interference although at the moment we believe it's probably someone within the repeater footprint trying to receive the repeater with a transmit capable SDR or a misconfigured hotspot. If that's you, please don't.

As part of the response to the DMR issues, in early January we installed an APC power distribution rail with remote power control and a separate power supply for the DMR Pi. This allows us to remotely power cycle the Pi and MMDVM modem. Since that installation the Pi has been completely stable, even in the presence of recent storms.

Beacons

The Isaacs Ridge 2m beacon on 144.410 MHz has been operating normally without any issue.

The Mt Ginini 23cm beacon on 1296.410 MHz however seems to have a minor issue with the mounting of the antenna causing it to tilt depending on the prevailing winds. This manifests as occasional drops in signal strength in some directions depending on how far it has tilted. Otherwise it's performing well.

APRS

The APRS digipeater on Mt Ginini has functioned well over the past year. According to aprs.fi it has a receiver range of around 300 km and repeats from 4 to 6 packets per minute on average.

Isaacs Cleanup

In November the club organised a group to tidy up the compound and immediate area, removing excess growth and reducing the fire hazard to the hut and compound. The group did an excellent job and a huge thanks to all those who volunteered their time, effort and equipment.

Internet at Isaacs Ridge

Internet access for club equipment at Isaacs Ridge is supplied under a sponsorship agreement with The Signal Co. This sponsorship started when The Signal Co was co-sited in the same hut as us, but they have since moved

to a different site on Isaacs Ridge. We now access them via a microwave link the same as their customers, however we're not in the primary beam for any of their customer antennas. This has resulted in interference issues for us from one of The Signal Co's competitors using the same unlicensed spectrum. This interference mainly causes issues for the D-Star repeater which manifests as broken audio on network links. This is relatively minor and the D-Star repeater is still usable.

Planned Works

The committee is planning a maintenance trip to Mt Ginini within the next month to fix a number of minor issues (like the beacon antenna mount), perform some preventative maintenance on the tower and to inspect everything to make sure it will survive another harsh winter.

Sponsors

The committee would like to thank all of our sponsors, however in the area of repeaters there are two we'd like to highlight. Firstly Watts Communications, for providing access to their site on Isaacs Ridge. Alex at Watts Communications has been a supporter of the club for a long time and access to their site has allowed us to provide multiple services for the local area.

Secondly, we'd like to thank The Signal Co. Their provision of internet access at Isaacs Ridge has allowed us to install IRLP, Echolink, D-Star and DMR repeaters for the local area and dramatically improved our capabilities at the site.

The Future

The ACT and surrounding region is well served with repeaters of various types and capabilities but we're not just maintaining the status quo. We're investigating internet access for Mt Ginini with a view to providing command and control capability and possibly voice and data linking. We're working on upgrading our infrastructure at Isaacs with new power distribution and control capabilities and consolidating the equipment racks. We're also looking at new developments in Amateur Radio and what needs upgrading to support them.

Carl Makin,
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A CRARC Vice President