# Harrietville Television Committee Inc.

A.B.N. 11 342 844 238

Dr. P. A. Arriëns
Treasurer/ Technical Coordinator
c/o Post Office
Harrietville Victoria 3741
tel. (03)57592563
Email pieterarriens@westnet.com.au

B14/8

The General Manager
Digital Broadcasting
Department of Communications,
Information Technology and the Arts
GPO Box 2154
CANBERRA ACT 2601

9 August 2007

re: Comments on Issues of Self-Help Digital Television Retransmission

This hard copy of our submission is an improved version of the submission E-mailed and received by you yesterday, 8 August.

Harrietville Television operates a voluntarily managed analogue TV translator in regional Victoria (No. 58 RVIC), retransmitting ABC, SBS, WIN, TEN, and PRIME television broadcasts into a reception black hole in the upper Ovens River valley.

**Comments re issues raised on P. 7 of your Discussion Paper:**

**TECHNICAL VIABILITY:** Our analogue translator installation straddles over the crest of Cavalier Spur where the ridge crest trends at right angles to the signal path coming in from the regional transmitter on Mt Baranduda. Although a multiplex combiner system was considered for the main retransmission to Harrietville, separate individual transmitters were preferred from experience with the former repeater; each channel has its own receiving antenna on the northward slope of Cavalier Spur and its own transmitting antenna to Harrietville on the south side of the ridge.

There is no tower. VHF reception from Mt Baranduda for the ABC and PRIME is taken by Yagi antennas mounted on separate poles about 3-4 metres high; UHF reception for SBS, WIN, and TEN is taken on Yagis mounted on separate posts at about shoulder height where the strongest signal is received. Very low power retransmission in two other narrow sectors became feasible when a former obsolete repeater was replaced by the translator funded by the TVBSP (TV Black Spot Program). Both of the transmitting antennas for these narrow sectors are powered via a common bank of single channel amplifiers which serves to combine and equalise the output for the five channels.

The five separate Yagis for UHF transmission to Harrietville township are mounted at about shoulder height above the southward sloping ground on a gantry located near to the transmitter hut. A near vertical screen of 14 square metres of aviary wire (10 mm square mesh netting) placed nearer to the hut has proved helpful for reducing troublesome backward signal radiation into the transmitter hut, in effect improving front to back ratios for the transmitting antennas by about ten times.

The main site is protected by nine lightning conductors each at least 6 metres tall, all of them connected to a common outer ring earth dug into the ground around the circumference of the installation on both sides of Cavalier Spur. All but one of the antennas lie inside the protected area. These lightning conductors plus heavy duty varistor surge diverters and a plasma arc chamber installed on the mains electricity power cable so far have entirely prevented direct and indirect damage from lightning strikes over the last five years, even when spectacular "killer" electrical storms have swept over Cavalier Spur.

Although there is no air conditioning, a sun roof constructed as a thermal radiation shield with a 30 cm air space above the roof of the transmitter hut has not only reduced diurnal temperature variation each day, but also has reduced the extremes of high temperature inside the hut on hot summer afternoons and low temperature extremes during calm winter nights under clear skies. The sun roof was installed in December 2006, with the excellent result that no service intervention has been required over the last eight months to replace electronic components or to make adjustments to the gain of amplifiers.

The experience gained from five and a half years operation of the analogue translator underlies our preference to retransmit digital television with separate antennas and transmitters for each channel.

## COSTS of CONVERSION, OPERATION and MAINTENANCE

The Committee wishes to simulcast analogue and digital transmission of all channels for a transitional period, preferably starting as soon as possible and not less than two years before analogue television will cease from Mt Baranduda. Given ample site space for setting up the additional antennas, and the adequate capacity of a new underground mains electricity cable laid in December 2004 to power simulcast retransmission, we hope to begin with experimental operation of one channel to determine what radiated power will be required to ensure reliable reception of digital TV in various sectors of Harrietville.

Simulcast operation implies parallel installation of new equipment rather than conversion of existing equipment, but given the *proven* competence and willingness of volunteers to undertake installation and technical maintenance, the costs for establishing simulcast retransmission to Harrietville will be very much less than your indicative average cost of $138,000 for conversion of regional self-help sites.

As an example of what is meant by *proven* contribution from volunteers - when the original ten year old 1,640 metres long underground mains power cable (ripped in bare through a mole plough) succumbed to termite attack and had to be replaced in 2004, only one electrical contractor was interested to bid for the challenging task of laying a new cable in conduit (as we wished) on the slopes of up to 30 degrees gradient, rising 500 metres up a subsidiary ridge to Cavalier Spur. Another contractor who mistrusted using volunteers suggested ripping armoured cable bare into the ground, and estimated the cost to be over $40,000 for armoured cable with twin copper conductors of 10 square millimetre cross section. Armoured cable certainly would have resisted termite attack better than the original cable, but is known to have been breeched by termites elsewhere, and the conductor size was the same as in the original cable.

Instead, the new cable has twin 25 square millimetre conductors, so has 250% greater power capacity than the original cable, and was buried fully sleeved in heavy duty conduit using an open trench and backfill operation. The communitarian minded electrical contractor was massively supported with in-kind labour by volunteers. And the total cost? $22,699.38, of which $15,420.00 came from Regional Partnerships and $7,279.38 from cash partnerships raised in the village through a special cable levy.

Operation and maintenance costs for the analogue translator are covered by annual subscriptions which have been held at $35 per household for several years, but were higher in years past when the former repeater suffered recurrent severe damage from lightning. Several new houses are constructed each year in Harrietville, increasing the subscription revenue base for the committee. Other funds are raised through pub raffles and antenna servicing for householders.

As a matter of principle, given that advertising revenue for commercial broadcasters is linked to the size of the viewing population, there should be some formula whereby self-help organisations receive a measure of financial support from the commercial broadcasters, because after all, self-help retransmission does increase the size of the viewing public reached by the advertisements. Similar considerations might apply for the ABC and SBS. Viewers in cities and large towns do not have to make any effort or financial contribution towards generating the TV signals which they receive, but it should be possible to calculate roughly what it costs per head to radiate TV signals to the larger population centres.

## OTHER OPTIONS

We do not wish to comment on other options for digital conversion, because technical considerations will vary widely from site to site. SBS was taken off satellite for retransmission to Harrietville years before terrestrial transmission began from Mt Baranduda, but the terrestrial signal was preferred when the translator was built with TVBSP funding.

**Comments re issues raised on P. 8 of your Discussion Paper:**

**DTH versus CONVERSION to SELF-HELP DIGITAL RETRANSMISSION**

Other things being equal, we presently would prefer the latter approach rather than satellite digital to the home, even for populations below 500, but . course everything depends on distances, topography, new technology and population density in any area.

**Comments re issues raised on P. 9 of your Discussion Paper:**

**TIMING for DIGITAL CONVERSION of SELF-HELP RETRANSMISSION**

This question is closely related to the possibility of Federal funding, as was done through the analogue TVBSP. In our instance it is possible that Regional Partnerships funding assistance for simulcast retransmission could be obtained in view of the favourable infrastructure presently available at Cavalier Spur. Unfortunately the ACMA has not yet since April 2005 responded or even acknowledged receipt of our application for the additional apparatus licences required for simulcast retransmission, so no approach has yet been made to Regional Partnerships or other sources for funding assistance. A transitional period of simulcast transmission emphatically will give more time for technical fine tuning of digital transmitters while analogue continues to "carry the load", and householders will have more time to acquire digital set top boxes and if necessary, to upgrade antenna systems for reception of digital television.

The Harrietville translator although up at 930 metres elevation is so deeply surrounded in all directions by unpopulated higher mountainous terrain that it is hard to imagine on technical grounds that any digital UHF TV signal from Cavalier Spur could interfere with TV reception elsewhere. Our application for additional apparatus licences was fully documented on the required ABA12 forms, together with a copy of our certificate of incorporation and copies of letters of consent from the three commercial broadcasters for us to retransmit their broadcasts etc. Informal telephone inquiry some time ago elicited that the ACMA had not yet developed policy to regulate channel allocation for self-help simulcast TV retransmission, but confirmed that our application papers did reach the authority.

Thank you for the opportunity to make this submission.

Yours sincerely Pieter Arriëns

(Dr) Pieter Arriëns (VK3WWH)

Treasurer and Technical Coordinator
Harrietville Television Committee