

Boulder Amateur Television Club TV Repeater's REPEATER

August, 2022
issue #107

BATVC web site: www.kh6htv.com

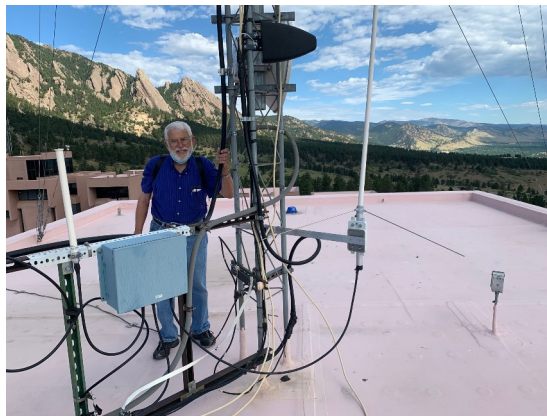
ATN web site: www.atn-tv.com

Jim Andrews, KH6HTV, editor - kh6htv@arri.net www.kh6htv.com



Visit to W0BTV

For the first time since covid pandemic struck, we were finally able to access our W0BTV - ATV repeater site. Our site host has been experiencing issues with their own radio communications system. They contacted us asking for help in identifying the numerous antennas, coax cables, etc. on the site. Also we needed to personally examine our own hardware.



On Thursday, July 14th, Don, N0YE, and Jim, KH6HTV, made an inspection trip to the roof-top of the south tower. See above photo. The white vertical antenna on the right attached to a side-arm at the base of the antenna tower is our receive antenna. It is a Diamond X-6000 (2m/70cm/23cm). The short white vertical antenna on the left is our 5.905 GHz transmit antenna. It is a 10dBi, horizontally polarized Laird model OC5150H. The blue box to the right contains the 5.9 GHz FM-TV transmitter. The 423 MHz transmit antenna is much higher up on the tower. It is a DB Products, DB-411. We share that antenna with BARC's 70cm FM voice repeater. For complete details about our repeater, see application notes AN-51b & AN-53b. AN-52 is the history of our Boulder, Colorado ATV repeater. They are available at: www.kh6htv.com

We did find a couple of problems. The mounting bolt of the X-6000 to the de-coupling sleeve and side-arm bracket was loose. So we tightened it securely. The other issue discovered was a broken ground strap which connected the coax lightning arrestor to the main frame of the tower. This arrestor was on the coax cable used for both our receive

antenna and the up-link feed for our 5.9 GHz transmitter. We made a temporary repair but will need to return later with a new ground strap.



W0BTV - ATV repeater is the free standing rack on the right.

Another view of W0BTV

We also made a brief visit to the radio room on the floor beneath the roof-top. All appeared to be in order. These photos show the equipment in the room. They include BARC's 2m & 70cm FM voice repeaters, BCARES' D-Star 2m/70cm/23cm repeaters along with our host's UHF repeaters. We did find in there several new, heavy duty UPS AC back-up power supplies. They have been installed to provide short term AC power for the radio systems during a power failure, before the facility's back up diesel generators kick in.

DEEP SPACE EXPLORATION SOCIETY

The DSES is a group of scientifically dedicated radio amateurs. They are primarily based out of Colorado Springs.

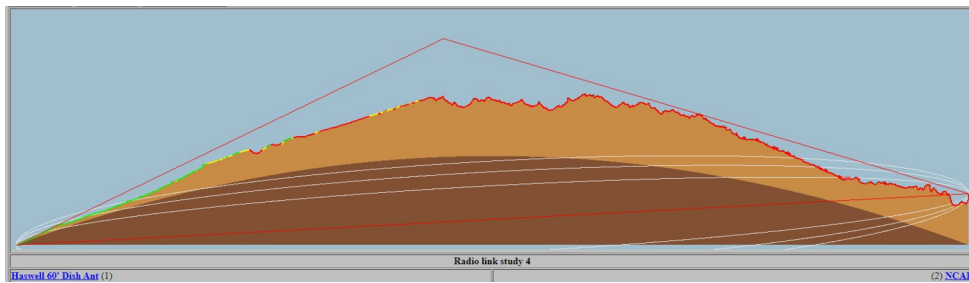
They have had the extraordinary luck to be able to obtain a government surplus 60 ft. dish antenna in remote south-eastern Colorado. The Haswell dish and a similar dish in Boulder were originally used many years ago (1957-74) by the National Bureau of



Standards (NBS), Central Radio Propagation Lab (CRPL) in Boulder, Colorado for tropospheric propagation research.



While the major focus for DSES is amateur radio astronomy, they also use the dish for other ham radio activities, such as EME. They also have an HF, 6m & 2m station at the site.



Haswell

Boulder

More recently, they have decided to also try their hand at DATV with the dish. Dr. Richard Russell, AC0UB, has been in contact with Jim, KH6HTV, and has purchased for DSES a complete 70cm DVB-T transmitter / receiver package. They hope to attach it to the 60 ft. dish antenna in the near future and aim it towards Boulder to see if they can access the W0BTV-ATV repeater. The rf path shown above is definitely an over the horizon path for a distance of about 160 miles. It should be possible. Don, N0YE, in Boulder says he has heard the Haswell dish on 1296 MHz, SSB in the past. We hope to report here in this newsletter, success from Haswell in the future.

Want to find out more about DSES ? Check out their web site: <http://dses.science/>

The GPS coordinates of their dish is: 38.380785 deg N x 103.156534 deg W

They are also hosting an open house on Saturday, August 13th. See their flyer in the Ham Ads section of this newsletter.



Rebuild Progress - KH6HTV

I am making slow progress in re-establishing my ham radio / TV gear after the fire. Now back on the air with capability for FM-TV on 5 cm band. The rig consists of the TS832, 600mW transmitter, RC832 receiver, L-Com BBQ grill antenna on a camera tripod and an 11", 12Vdc, 1080P video monitor. (see ATV newsletter, issue #106, p.10). The above photo shows the gear setup on my back deck of the new QTH receiving the 5.905 GHz Beacon signal from W0BTV-ATV repeater. The repeater is at the base of the mountains seen as silhouettes against the western evening sky. The distance to the repeater is about 12 miles. The received signal was a solid P4 with full quieting on the audio. Careful examination of the image reveals a bit of multi-path which is no doubt reflections off of the Flatiron mountains behind the repeater. I also tried the rubber duck antenna which was supplied with the TS832/RC832 combo. By searching for a "sweet spot" I was even able to receive a P3 picture with noisy audio with the rubber duck.

Jim, KH6HTV

Ongoing VK3CH Amateur Radio / Television Studio Works

A must read for ATVers out there who are interested in setting up a real broadcast TV studio in their ham shack is Mick's on-going series in the NEVARC News. This month,



he has a 43 page article covering many different topics. They include: cameras (including webcams & mobile phones), microphones, fancy titling, green screens, analog video to digital, digital to analog, vMix (great for using your PC to control & mix many A/V sources) including keyboard vs. mouse control & remotely, VLC, (media), Stream-Deck, etc.

The August edition of NEVARC News is on the club website at <https://nevarc.org.au/>
A direct link is here <https://nevarc.org.au/wp-content/uploads/2022/07/NEVARC-NEWS-Vol-09-Issue-08-2022.pdf>

World-Wide ATV QSO Party: Reminder, this annual event is coming up soon. The overall coordinator is Peter, VK3BFG (pcossins@bigpond.com) The USA coordinator is Roland, KC6JPG (kc6jpg@charter.net) Hopefully many USA chapters of ATN will be participating . It will be on the last week-end in August. Start time is Saturday, August 27th at 00:00 UTC (Friday, August 26th at 5:00pm Pacific Daylight Time / 8:00pm Eastern Daylight time) for the United States.

For the USA, the qso party will start with Art Towslee - WA8RMC for the eastern US, followed by Bill Eberle - AB0MY, for Boulder / mid US, then Lee Weitzel - K0CCU representing Arizona, Jim Tittle - K6SOE leading Mt. Diablo, Ben Carlucci -W2NYC representing the Silicon Valley ATV, and Roland with the six ATV repeaters in SoCal, and one ATV repeater in Nevada.

The Boulder coordinator is Bill, AB0MY, (w.eberle@ecentral.com) For more details, contact your local coordinator.



K8FIX, Bruce Kobie at the DARA clubhouse's shared ATV station console working on the documentation project

K8FIX Begins Documenting Dayton Amateur Radio Association ATV Repeater System Layout

We are in the process of documenting the many additions and changes that have been made to the DARA ATV System as a result of the last nine years of work that has been done with the addition of amplifiers, DVB-T receivers and transmitters, new interdigital filters, and the addition of dual junction tunable isolators. Along with installation of all of the digital equipment, the isolators have allowed for the use of a single 70cm transmitter antenna for simultaneous multi-cast of the 421.250 MHz analog TV transmission and a 2 MHz-wide 428 MHz DVB-T TV transmission. This paired analog/digital multiplex transmitter configuration is the only TV transmitter configuration in existence being successfully employed in the amateur radio community. Bruce volunteered to document the entire repeater system, stem-to-stern, via his expertise with CAD.

Dave, AH2AR, Dayton, Ohio

USB TV Tuner Dongle for DVB-T

I recently bought a Nooelec NESDR Mini 2+ SDR and DVB-T USB dongle. (\$30 on Amazon-Prime) It is supposed to be an improved version of the RTL-SDR dongles that many of us are familiar with. It uses a newer tuner (R820T2) and a lower noise internal power supply. It also has a greater precision oscillator (TCXO) than most have. The antenna connector is MCX. There are a couple of accessories that come with the dongle. There is an MCX to SMA adapter and a little antenna with an MCX connector on it.



It works well, but here's the catch; Getting the correct driver is tricky. Microsoft does not have the correct driver. If you do a driver update you will get an old driver from 2010. A Realtek 2832U driver from 2012 is needed for this to work. Rather than trying to describe the process of getting the correct driver here, I refer the reader to :

<http://www.users.on.net/~learoy/Installing%20RTL.pdf>

This will give you a link to the correct driver and tell you how to install it.

To see/hear a DVB-T signal I use the program **VLC**, which is free. (<https://www.videolan.org/vlc/>) To use it, open VLC, go to "media" along the top menu bar and go to "open capture device". From there, find the capture mode pull down menu and select TV-digital. Be sure DVB-T is selected. Set your frequency in the "transponder/multiplex frequency" field and pull down the bandwidth menu and select your bandwidth. Press "Play" and you should soon see your TV signal.

If you want to use the dongle as an SDR for general purpose receiving, go to start.nesdr.com for details on how to install a different driver to do that. Unfortunately no one driver allows use both as an SDR and a DVB-T receiver.

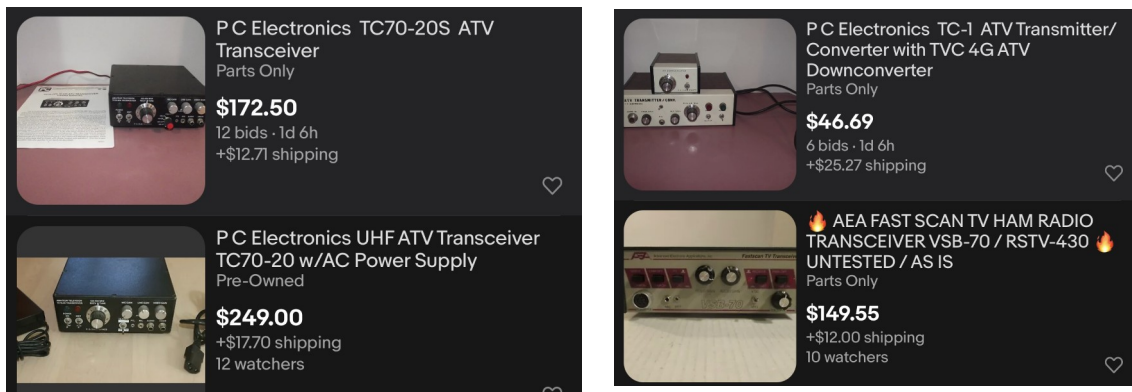
I am happy with this so far, but I haven't used it to receive off the air yet, just across the room from a DVB-T transmitter.

Pete, WB2DVS, Boulder, Colorado

News from San Diego, California

We now have two FCC licensed LPTV | ATSC 3.0 stations on air in Ramona and Oceanside with Amateur Radio / TV programming as part of our Science and Technology Series.

73 de Mario, Kd6ILO



Feed-Back on Analog ATV: Dave, AH2AR, says don't give up hope on finding old, NTSC, analog ATV gear. He recently did a search on E-Bay and found these "hits".

Feed-Back on W1GHZ RFI: Excellent article by Paul, thanks for sharing it. This might be one of those times when I won't say bad things about the big hill between me and the TV transmitters north of me.

Thanks again Mike, KA5TDA, Moore, Oklahoma

Hi Jim --- Interesting articles from Paul in your latest newsletter. I have met him several time at conferences and he always has inspiring talks and interesting projects.

73 de Mel, K0PFX, St. Louis, Missouri

Feed-Back: Hi Jim --- Many thanks for your newsletter. As everyone else I am getting showered by newsletters from all the RF magazines, IEEE and HAMS.

However, for most of them I just skip over the subject line, some I will scan more thoroughly over the next days, but yours is only one I open immediately when I get it! I am not an ATV person, but it is always good and provoking other thoughts for my work and HAM stuff.

Thanks & 73, Greg, ZL1GSG,

2 vs. 6 MHz BW Teaser: In our next issue (#108), look for an article on *"What Are the Differences in Receiver Sensitivity for 2, 4 & 6 MHz Band-Width DVB-T Signals ?"*

W0BTV Details: **Inputs:** 439.25 MHz, analog NTSC, VUSB-TV; 441MHz/6MHz BW, DVB-T & 1243 MHz/6MHz BW, DVB-T
Outputs: Channel 57 --- 423 MHz/6MHz BW, DVB-T, or optional 421.25 MHz, analog VUSB-TV. Also, secondary transmitter, FM-TV output on 5.905 GHz (24/7).
Operational details in AN-51a Technical details in AN-53a. Available at:
<https://kh6htv.com/application-notes/>

W0BTV ATV Net: We hold a social ATV net on Thursday afternoon at 3 pm local Mountain time (22:00 UTC). The net typically runs for 1 to 1 1/2 hours. A DVD ham travelogue is usually played for about one hour before and 1/2 hour after the formal net. ATV nets are streamed live using the British Amateur TV Club's server, via: <https://batc.org.uk/live/kh6htvtvr> or *n0ye* or *ab0my*. We use the Boulder ARES (BCARES) 2 meter FM voice repeater for intercom. 146.760 MHz (-600 kHz, 100 Hz PL tone required to access).

Newsletter Details: *This is a free newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to about 500. News and articles from other ATV groups are welcomed. Permission is granted to re-distribute it and also to re-print articles, as long as you acknowledge the source. All past issues are archived at: <https://kh6htv.com/newsletter/>*

ATV HAM ADS

Free advertising space is offered here to ATV hams, ham clubs or ARES groups. List here amateur radio & TV gear *For Sale - or - Want to Buy.*

FOR SALE -- DCI FILTERS

I have two DCI, VSB-TV, channel filters available for sale. They are tuned to 439.25 MHz and 421.25 MHz. In good working shape. Interested? Reply to me with any offers. n0mnb@comcast.net

Bill, N0MNB, Blaine, MN



SLATS

ST. LOUIS AMATEUR TELEVISION SOCIETY

Buy - Sell - Trade - Giveaway

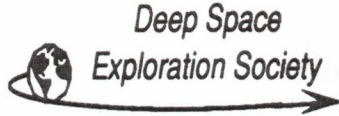


(web site: http://www.slatsatn.net/?page_id=713)
Check it out. New items listed every week



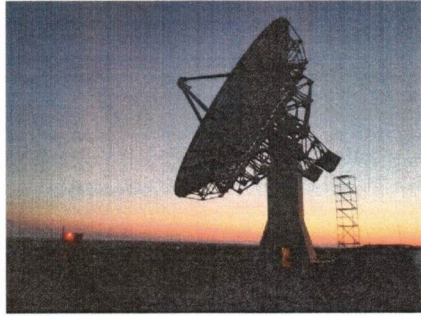
WWW.SLATSATN.NET

**Items like: Microwave Test Equipment,
Flex Radio 3000 , Antenna Bridge, Hi Freq Probe,
Marconi Power Meter, 23cm Trnsvrtr, NTSC TEST EQUIP!**



A Non-Profit Corporation Dedicated to the Excitement of Hands-on Space Exploration

***7th Annual Deep Space Exploration Society
Open House – Public Invited***



Saturday August 13, 2022, starting at 10 AM, at the Plishner Radio Telescope Site, located on County Rd 20, 5 miles south of Haswell, CO.

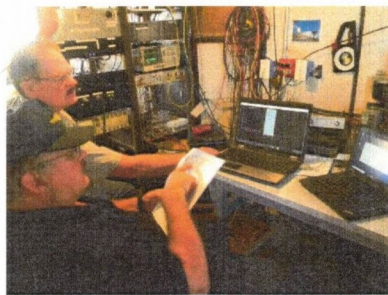
In addition to demonstrating the many capabilities of our 60Ft Radio Telescope, we offer a Science, Technology,

Engineering, and Math, (STEM) and Armature Radio event with several optical telescopes on site for viewing of the skies both during the day with sun filters and at night. We will have radio equipment on site to demonstrate all of our working science projects. A ham radio station using the DSES club call sign, KØPRT (Plishner Radio Telescope) will be on the air on High Frequency radio bands. We hope to have an amateur radio Oscar satellite station working as well.



We have lots of parking space for RV's, and Cars. We will start grilling hot dogs with sides around 5PM Saturday. We will have several coolers of cold bottled water for those who need it.

Be prepared for hot temps during the day and possible thunderstorms during late afternoon or evening. Hats, sunscreen, bug repellent and shoes for mud are recommended.



Directions: I25 to Pueblo, to Highway 96 Ordway to 96 Haswell to CR 19 to DSES site. Or, 94 through Ellicott to Punkin Center, 71 south to Ordway and 96 to Haswell and CR 19 to site.

