

VHF/UHF Beacon Antennas

What's wrong with what we have?

Existing antennas



- Photo shows existing KU4AB SQ-50 6M beacon antenna, (outer) and KU4AB SQ-144 antenna (inner) with nut driver for size.
- Compare with similar construction of KU4AB SQ-222 125 CM antenna (actual unit from previous stack).
- One corner of flange-mount coax connector mounts to antenna with one bolt and nut. Requires strut to support. Vulnerable to moisture ingress to coax and vibration fracture of wire link - broken in past and likely to fail in future.

What's wrong with what we have?

- First choice of beacon antennas in 2008 (11 years ago) was PAR Omni but PAR would not then accept amateur orders due to a huge CIA contract soaking up their production for years ahead.
- WCARC had to settle for poorer quality KU4AB garage-built hardware:
 - Antenna and feedline connection easily damaged by wind, rain, ice and snow
 - Imperfect omni-directional radiation plot
 - No balun so propagation has been compromised by common-mode RF radiation from the feedline.
 - Steel screws, nuts lock-washers subject to galvanic corrosion with aluminum antennas .

Proposed Replacement - PAR Omni OA50



Light weight (no strut required) Solid construction.
Current balun with integral coax connector. Omni-directional radiation.

MOUNTED OMNIANGLE
NOTE THE JITTERBUGGED FINISH



UNDERSIDE VIEW OF OA-50
SHOWING MACHINED CLAMPS





PRECISION SLIDING JOINT

PAR Omni OA-50

- Price is US \$114 plus shipping and HST - ~ C\$200 delivered.
- Replacing the 6M antenna requires releasing two mast clamps from observatory eave and lowering mast for access to the four VHF/UHF antennas – a two person job. Removing the SQ-50 involves loosening nuts on the mounting U bolt and mounting the new antenna and tuning for best match by sliding elements in and out.
- While we are on the roof and the mast is down, should we replace all four antennas?

PAR Omni – OA-144 and OA-222



PAR Omni OA-432



- All four have current baluns with integral coaxial connectors.
- Radiation from all four deviate from perfect omni-directional circles by less than $\frac{1}{2}$ dB.
- OA-144, OA-222 and OA-432 are priced at only US \$ 79 plus HST
- Projected total for all four - under C\$700 - delivered.
- Labour effort to replace all four just slightly more than for just the one OA-50 antenna as all feedlines are already in place.

Beacon Antennas

- The WCARC beacons have provided service to the amateur community for more than a decade.

Our choices are:

- Stay with what we have, knowing that another failure of the antennas is probable, and the substantial effort to repair it/them does not ensure future reliability, given the shoddy construction of all four.
- Buy and install just a PAR Omni OA-50 at ~ C\$200 delivered.
- Buy and install OA-50, OA-144, OA-222 and OA-432 at ~ C\$ 700 delivered.