Chippewa Valley Amateur Radio Club

The SPARK GAP

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HAPPENINGS

Antenna Party:

In keeping with the true amateur "antenna party" tradition (that towers and antennas are never put up during warm, accommodating weather), a group assembled on Friday Nov. 18th, at Ron (Skip) Krueger's house near Lake Wissota. Naturally, the weather was cold and a little windy. A 55 ft tower was erected and a ***SteppIR***, three element (plus a passive element for 6 meters) yagi and a 2 meter/70 cm antenna were mounted near the top of the mast.

The work crew consisted of; climbers Joe Eide (KB9R) and Jon Case (KE9KW); ground crew Gale Sorum (WD9HFT) and Bert Spangler (K9SSI); and Crane operator Jerald Stone of Stone's Crane Service.

After all the work was done, chili and various other goodies were served. Several of these antennas are now up in the area. They all appear to be working well and the owners are happy with them.

TECHNICALLY SPEAKING

The following article was written by Dr.Barry L. Ornitz WA4VZQ, a PhD chemical engineer who has worked for several manufactur-ers of plastics and chemicals, has quite a bit of experience with the physical and chemical properties of plastics, and is familiar with the chemical and ultraviolet resistance of polymers.

Polypropylene rope is most commonly used here in the States as "ski rope." It is inexpensive, light weight, strong and it floats. But the polymer structure of polypropylene (and most other polyolefins like polyethylene, etc.) is not resistant to ultraviolet. When exposed to sunlight, it quickly degrades from the ultraviolet radiation. The result is considerable weakening of the rope along with surface oxidation. The loss of tensile strength is naturally a bad thing for a guying application. The surface oxidation is of not much concern here, but when used as an insulator (such as on the ends of a wire dipole), the oxidized surface becomes wettable allowing surface contamination to adhere. This can increase the RF losses of the rope slightly. If you observe polypropylene rope after a season or two outdoors, you can visibly see the surface degradation and you can often seen numerous broken strands.

To slow the degradation of polypropylene rope, or any plastic for that matter, anti-

oxidants and ultraviolet inhibitors may be added. These increase the life of the rope somewhat, but they do not offer ever-lasting protection. Certain colors offer better ultraviolet protection too. I am sure that most people are familiar with the fact that organic dyes and pigments fade. Red is probably the worst offender, followed by yellow. Bright white and black generally hold up the best. In polypropylene rope, the black will generally do better than the white. Since the polypropylene is naturally translucent, it takes little white pigment (usually titanium dioxide) to make it white. Black is cheaply obtained by adding carbon black to the polymer melt. The white pigment tends to reflect the ultraviolet while the carbon black tends to absorb it and convert it to heat. With its low pigment loading, black polypropylene is probably better than the white.

A much better choice is nylon rope. It is strong, readily available, and has a fairly high ultraviolet resistance. It does stretch considerably, and this is an important consideration in antenna work. Chemically, the nylons are in a family known as polyamides. Their chemical resistance is normally good except in areas where acid conditions exist. These tend to occur in industrial areas with high smog or where acid rain is prevalent. Again bright white or solid black is to be preferred in outdoor use.

Probably the best rope materials for outdoor use are the polyesters. Typically these are polyethylene terephthalate (PET) or polybutylene terephthalate (PBT), although I suppose polyethylene naphthalate (PEN) ropes exist today. The most common material is PET [more properly called poly(ethylene terephthalate)], known under such trade names as Dacron (DuPont), Fortrel (Wellman), Kodel (Eastman), A.C.E. (Honeywell). etc. [For some reason, rope vendors at many USA hamfests tend to charge a premium for Dacron, probably because of the name recognition.]

Polyester ropes have very low stretch making them excellent for guying applications. They are excellent in both chemical and ultraviolet resistance. The polyester materials have an interesting property that makes them especially ultraviolet resistant. These materials fluoresce upon exposure to ultraviolet light; they absorb ultraviolet radiation and reemit it as light at a longer wavelength. Generally the emission is in the near-infrared region but some materials fluoresce in the visible spectrum too. This is an effective way of getting rid of the energy absorbed from the ultraviolet and it provides much of the ultraviolet resistance seen in these materials. Their chemical resistance is even better than the nylons. Black or white colors are still to be preferred, although I have seen surplus military rope in the traditional olive-drab color that should perform well. Since the polyesters are generally clear, they take more white pigment to color them than to the polypropylene materials. Thus the white rope is almost as good as black for long-term use.

There are other specialty ropes available such as those made from polyaramides (Kevlar and Nomex by DuPont) and polyimides. The Kevlar ropes are extremely strong, but they require special stranding and covering to avoid abrasion problems; their abrasion resistance is quite poor. There are also composite ropes made with a core of one

material which is clad with a woven covering. These tend to be rather specialized and are probably not worth much discussion. However there are polyester covered polypropylene ropes on the market today. These rely on the good strength of the inexpensive polypropylene core, while the jacket provides considerable protection of the core from sunlight. Wire ropes are also commonly available, and entire books have been written on their design and application. It is usually best to consult the manufacturers directly about applications of these specialty ropes.

I hope this gives a better explanation of why you might not want to use polypropylene in many applications. However, I do like to use polypropylene ropes for Field Day antennas. These are used only a few days each year, and the bright colors can provide contrast to prevent people from walking into them! They are inexpensive enough to discard too.

AREA HAMFESTS

7 Jan 2006
Hamfest and Computer Show
West Allis Radio Amateur Club
Waukesha County Expo Center Forum
1000 Northview Road, Waukesha, WI
http://www.warac.org

25 Feb 2006
Hamfest and Computer Show
Madison Area Repeater Association
Mandt Community Center
400 Mandt Parkway
Stoughton, WI
http://www.qsl.net/mara

25 Mar 2006
25th Annual Midwinter Madness
Robbinsdale ARC
Buffalo Civic Center
1306 Calder Avenue
Buffalo, MN
http://www.k0ltc.org

22 Apr 2006
Hamfest and Computer Show
Madison Area Repeater Association
Mandt Community Center
400 Mandt Parkway
Stoughton, WI
http://www.qsl.net/mara

NOVEMBER MEETING MINUTES

(Summary) The Secretaries and Treasures ($743.75) reports were presented and approved. The new meeting schedule was reviewed and all expressed approval. Old business included results of the resent Fox Hunt, report of the Photo / Text Directory Project committee, discussion on the Oct. 29 ARES/ RACES State Conference, and progress on liquidation of John W9SWLs radio equipment. New business included SWR variation when fixed meets moving objects by Ron W9RMA. The NEXT MEETING IS TUESDAY DECEMBER 6 at the Airport (6:00PM for meal and 7:00PM for the meeting. The Club Activity involved a discussion and demonstration of construction of a Center Insulator/1:1 balun by Joe KB9R and Ron W9RMA. The tentative schedule of future activities include 1.) Improving your photography (January); 2.) Tracking Radio Interference (February); 3.) Lightning and proper grounding (March); 4. Signal Attenuators for HTs (April); and 5.) Field Strength meters (May).

CVARC OFFICERS

President –– Gale Sorum (WD9HFT)

Vice President –– Bert Spangler (W9ZZ)

Secretary –– Ron Krueger (W9JRW)

Treasurer –– Ron Anderson (W9RMA)

Past President –– Joe Eide (KB9R)

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