

# DO CLIMBABILITY ADDITIVES RETAIN THEIR BENEFIT OVER TIME?

## *Climbing trials of CCA/oil emulsion poles after 9, 14, and 20 years' exposure*

The effectiveness of wood preservation has been well-established, and pressure-treated wood poles are the pre-eminent choice for distribution and some transmission poles. A steadily increasing share of these poles is treated with waterborne preservatives, most commonly CCA. Compared to poles treated with creosote or pentachlorophenol, CCA-treated poles are regarded as harder to climb.

Manufacturers have introduced treatment additives which soften the shell of CCA poles, making them easier to climb with standard gear. The benefit of additives is acknowledged for freshly treated poles, but skeptics have questioned whether or not the enhanced climbability persists after exposure to sunlight and precipitation.

To address such questions, a climbing trial was arranged to compare poles treated with pentachlorophenol, CCA and CCA/oil emulsion (sold under the ET® brand) after 20 years of exposure.

Test poles, installed in 1988 at the research facility of Arch Wood Protection, Inc., in Conley, GA, had been treated to normal industry standards with either penta, CCA, or CCA-ET (1.0 lbs./cu.ft.). Climbing trials conducted in 1997 (after 9 years exposure) and 2002 (14 years) indicated comparable ease of climbing between the penta and CCA-ET poles.



For the 20-year trial, eight linemen from three rural electric cooperatives participated: Snapping Shoals EMC (GA), Mid-Carolina Electric Cooperative (SC), and EnergyUnited (NC). Timber Products Inspection, Inc., an independent, wood products inspection agency, was retained to observe the trial and collect evaluation data. The trial took place on the afternoon of May 29, 2008, under cloudy skies with a recorded temperature of 78°F.

The average utility experience of the linemen was 11.5 years, with a range of 5 to 21 years. Their experience climbing CCA poles averaged 7 years (range of 2 to 21 years). The average weight was 188 pounds, with a range of 165 pounds to 225 pounds. Each of the eight linemen climbed each of 17 poles. Pole climbing gaffs were provided by the linemen and included Klein, Bashlin, and various Buckingham types. Climbers could recognize the penta poles by their color difference; the CCA and CCA-ET poles were indistinguishable by color, and linemen were not informed as to which

poles had which treatment.

Poles were rated on five measures – gaff penetration, insertion force necessary, withdrawal force necessary, climber confidence, and overall impression -- on a scale of 1-10 with 1 being unacceptable and 10 being excellent.

### **20-Year Climbing Trial — 2008**

TREATMENT	GAFF PENETRATION	INSERTION FORCE	WITHDRAWAL FORCE	CONFIDENCE	OVERALL RATING	AVERAGED VALUES
Wolman® CCA	4.65	4.95	6.55	5.95	5.71	5.56
Wolman® CCA-ET	7.44	7.02	7.50	8.25	7.95	7.63
Pentachlorophenol	8.27	7.60	5.92	8.25	8.00	7.61

These results mirror those from the 9-year and 14-year trials, indicating that climbability of penta and CCA-ET poles is very similar and the climbing attributes of the ET treatment remained after 20 years of exposure.



**1988  
POLES INSTALLED**



**1997  
9-YEAR CLIMBING TRIAL**

linemen: Carolina Power & Light

POLE TREATMENT	AVERAGED VALUES
CCA	4.8
CCA-ET®	7.6
Oil Penta	7.2

**2002**

**14-YEAR CLIMBING TRIAL A**

linemen: Georgia Power

POLE TREATMENT	AVERAGED VALUES
CCA	5.5
CCA-ET®	7.3
Oil Penta	7.0

**14-YEAR CLIMBING TRIAL B**

POLE TREATMENT	AVERAGED VALUES
CCA	4.6
CCA — wax	4.7
CCA-ET®	6.8
Oil Penta	N/A

**2008**

**20-YEAR CLIMBING TRIAL**

linemen: Snapping Shoals, Mid-Carolina, and EnergyUnited

POLE TREATMENT	AVERAGED VALUES
CCA	5.56
CCA-ET®	7.63
Oil Penta	7.61