

One Tough PUPI™

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PUPI® Crossarm High Voltage Tests

Tests performed at the National Electric Energy Testing Research and Applications Center (NEETRAC), Georgia Institute of Technology

February, 2002 (wood pole)

8' PUPI Series 2000 braceless tangent with PUPI mount

8' PUPI Series 3000 braceless tangent with PUPI mount

Test method IEEE Standard 4-1995

- Arms attached to wood power pole, three phase configuration.
- Arms tested with ANSI Class 55-5 (25 kV porcelain) insulators mounted 4" from crossarm ends and also with the insulators removed and impulses applied directly to the pin mounting hole.
- Center phase grounded, outer phase impulsed.
- Maximum output of the generator used is 500kV.

Results:

- No flashover at maximum output of generator of 500 kV.
- If critical impulse flashover had occurred at 500 kV, BIL level is 450kV.
- Since flashover did not occur, **BIL level of the PUPI Series 2000 and Series 3000 crossarms exceeds 450kV.**

April, 2002 (steel pole)

8' PUPI Series 2000 braceless tangent with PUPI mount

8' PUPI Series 2000 braceless deadend assembly with PUPI mount

Test method IEEE Standard 4-1995

- Tested with steel pole and higher power generator than February, 2002 test.

Results:

- **PUPI Series 2000 tangent:** Critical impulse flashover = 577.9 kV
- Arc from conductor tie to front and back of crossarm mounting bracket.
- **BIL = 555kV**
- **PUPI Series 2000 deadend:** Critical impulse flashover = 578.4 kV
- Arc from hot end of insulator to crossarm mounting bracket.
 - **BIL = 555kV**

Tests performed at Kinetrics Inc, Toronto, Ontario, Canada

April, 2006 (fiberglass pole)

10' PUPI Series 2000 braceless tangent with PUPI mount

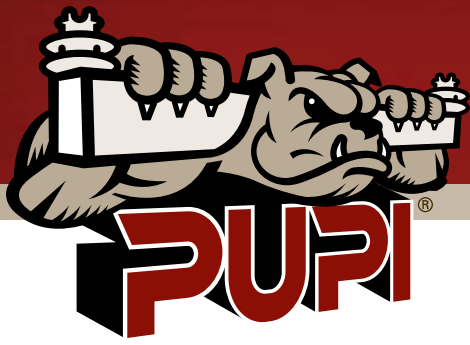
Results:

25kV Distribution Line mockup

- **Critical Lightning Impulse Flashover Voltage: 683kV (dry), 572kV (wet)**

69kV Distribution line mockup

- **Critical Lightning Impulse Flashover Voltage: 855kV (dry), 886kV (wet)**
- Lightning arc took air gap under dry condition, often crept along crossarm surface under wet.



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**275 kV Transmission Structures, PUPI fiberglass arms on steel lattice structures
October/November, 2010**

Dry lightning impulse tests to 1050 kV
Dry switching impulse tests to 850 kV
Dry power frequency tests to 460 kV
Wet switching impulse tests to 850 kV
Wet power frequency tests to 460 kV

Results:

PUPI arms easily passed all tests.

PUPI Series 22, 2500, 42, 44 and 4000 Crossarms

All PUPI crossarms have the same chemical formulation, fiberglass and synthetic veil construction, and in-line thermally cured polyurethane coating as the crossarms tested. PUPI Series 22, 2500, 42, 44, and 4000 crossarms have the same electrical performance as the arms tested.