

## Team - Suspension Insulator Change and Phase Down

Mean Time = 15 minutes ~ Dead Time = 20 minutes

Event Description: The object of this event is to change out all three of the primary polymer suspension insulators, splice approximately 10 feet onto the middle phase and put the middle phase back onto the pole, resagging the wire into the dead-end shoe, on a 40-foot, C5.71L with fiberglass dead-end arm, 8' cross arm, 1/0 ACSR phases and 1/0 ACSR neutral. The line will be grounded at the opposite end of the span. Participants can wear leather gloves when achieving an equipotential zone with the grounds within a span, and must use insulation (rubber gloves) when the zone cannot be achieved.

### Basic Outline:

1. The line will be simulated de-energized and grounds will be installed.
2. All tools and materials shall be located on tarp at start of event.
3. Competitors will start the event with tools on.
4. Time starts with Ready, Set, Go from the judges.
5. The first lineman that ascends the pole shall take the handline.
6. The crew will change out all 3 polymer suspension insulators.
7. The team then will splice onto the downed #1/0 middle phase, pull the downed wire up, and sag it into the dead-end shoe. Refer to attached spec for framing.
8. Wire must be sagged in using a hoist and grip, sag should match the other two phases.
9. Time will stop when second lineman's first foot hits the ground, but the team will continue to be judged until all material is neatly placed on the tarp.
10. Teams shall provide their own hoists, slings, material bucket, and 1 handline.
11. Judging will continue until all material is picked up and the event site is restored to the original condition.

### Possible Deductions (2pts.):

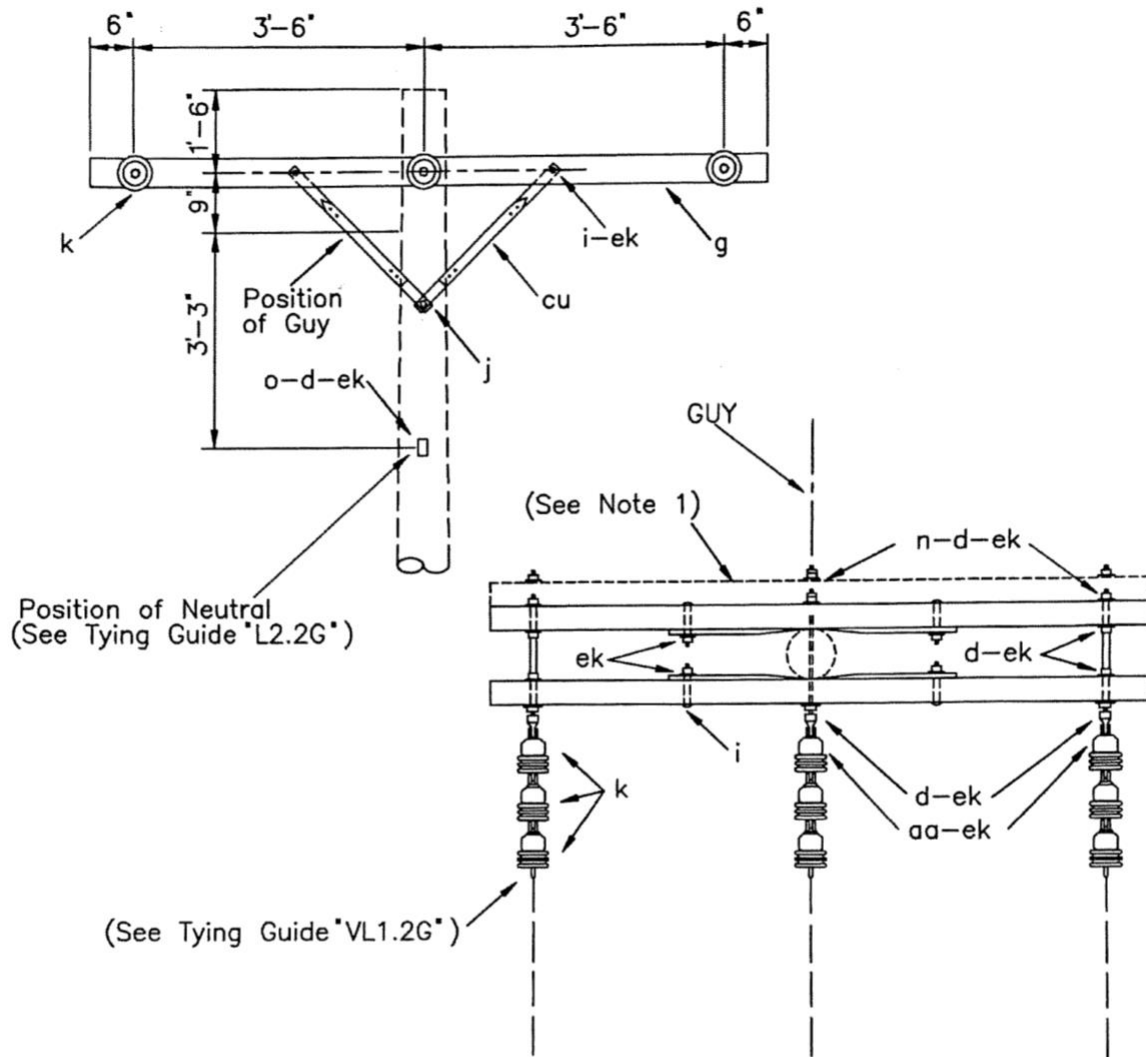
1. Infractions of any rules listed in the General Rules.
2. Improper securement of hoists to the crossarm or pole while securing conductors.
3. Team members handling all conductors shall only handle the wire with the use of rubber gloves.
4. Any person has prolonged contact with the neutral, with any portion of their body other than with rubber gloves.
5. Span sag is out of sag when the team completes the event.
6. Failed installation of quick splice.
7. Handling wire without rubber gloves when an equipotential zone isn't present.

Materials and equipment furnished

1. Teams will provide hoists, slings/becky, grips, material bucket, and 1 handline for this event.
2. All material for the event will be furnished.

#### Other Notes

1. Suspension insulators will be single polymers, not 2 bell porcelain.
2. The downed phase will be dead-ended into a 2-bolt style dead-end shoe.



PLAN

TEM	QTY	MATERIAL
d	11	Washer, square, 2 1/4"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	4	Bolt, carriage, 3/8" x 4 1/2"
j	2	Screw, lag, 1/2" x 4"
k	9	Insulator, suspension, 4 1/4"
n	3	Bolt, double arming, 5/8" x req'd length
o	1	Bolt, eye, 5/8" x req'd length
aa	3	Nut, eye, 5/8"
cu	4	Brace, 28"
ek	18	Locknuts

NOTES:

1. Designate as VC5.31 for assembly with three crossarms.
2. Neither assembly suitable for Grade B construction.
3. Double arming eye bolt, item "dy," may be used instead of double arming bolt, item "n," and eye nut, item "aa."

DESIGN PARAMETERS:

ALLOWABLE LONGITUDINAL  
LOADING (lbs./conductor) =

VC5.21: 2,000 (#2 ACSR)  
VC5.31: 3,000 (#2/0 ACSR)

SINGLE DEADEND ON CROSSARMS

DEC 1998

RUS

3 - PHASE PRIMARY  
24.9/14.4 kV

VC5.21

VC5.31