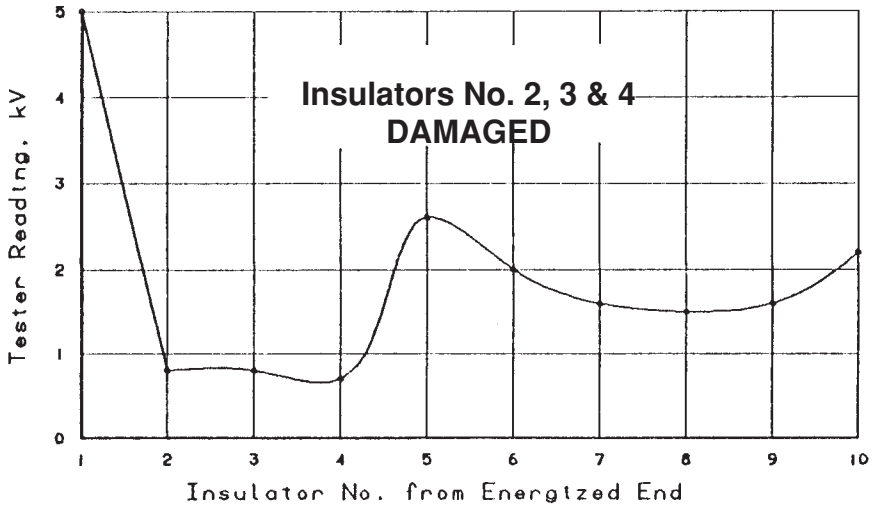
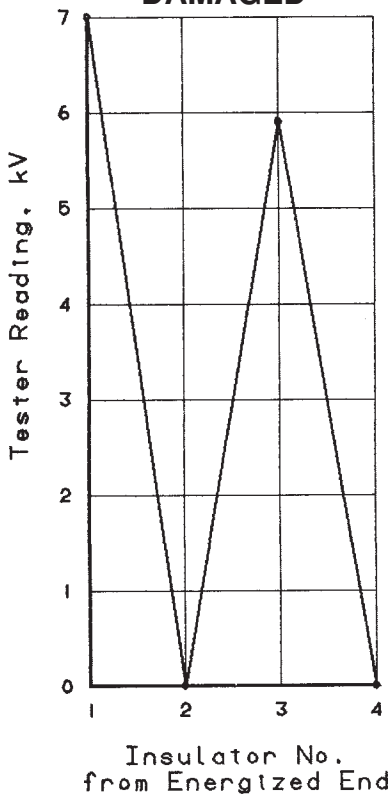
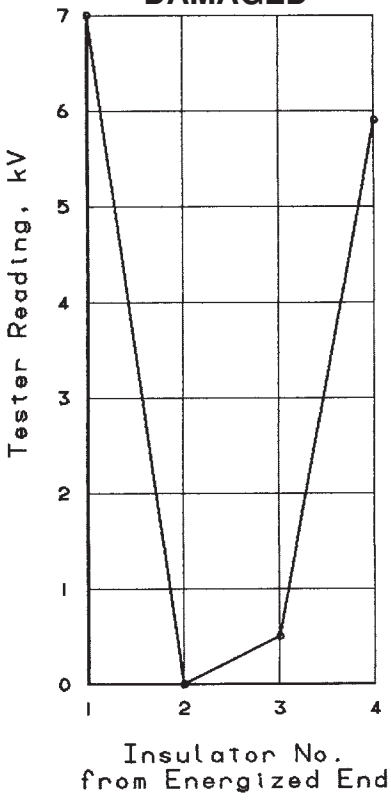


Insulators No. 2 & 4 DAMAGED



Insulators No. 2 & 3 DAMAGED



Operation Instructions for

HUBBELL POWER SYSTEMS, INC. CHANCE

Energized Insulator Testers

Catalog No.	System Application	Voltage
C403-2298	Distribution deadend insulators	through 35kV
C403-2299	Transmission suspension insulators	44kV through 500kV

⚠ CAUTION

The equipment covered in this manual should be used and serviced only by competent personnel familiar with and following good work and safety practices. This equipment is for use by such personnel and is not intended as a substitute for adequate training and experience in safe procedures for this type of equipment.

These instructions neither cover all details or situations in equipment use nor do they provide for every possible contingency to be encountered in relation to installation, operation or maintenance. Should additional information and details be desired or if situations arise which are not covered adequately for the user's purpose, the specifics should be referred to Chance.

NOTICE

Before operating a Chance Energized Insulator Tester, thoroughly read, understand and follow these instructions.

Retain these instructions in the device case.

NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

P403-2297

Basic Design and Function

With an overhead circuit fully energized, a Chance tester can check the condition of each insulator in a string. A sensitive voltmeter, the tester measures the difference in potential across each insulator. Straight steel probes threaded into the two tester forks contact the metal fittings on both ends of each insulator. (Activated by the energized line, the meter requires only a small leakage current to make a reading. Such a minimal load does not affect the relationship among readings for insulators in the string.)

Readings taken on a string of three or more insulators produce a voltage-distribution curve when plotted against their positions in the string. *In a string of all good insulators, the insulator at the energized end will produce the highest reading. From there toward the grounded end, the readings will decrease until the last insulator, which normally is higher than the one next to it.*

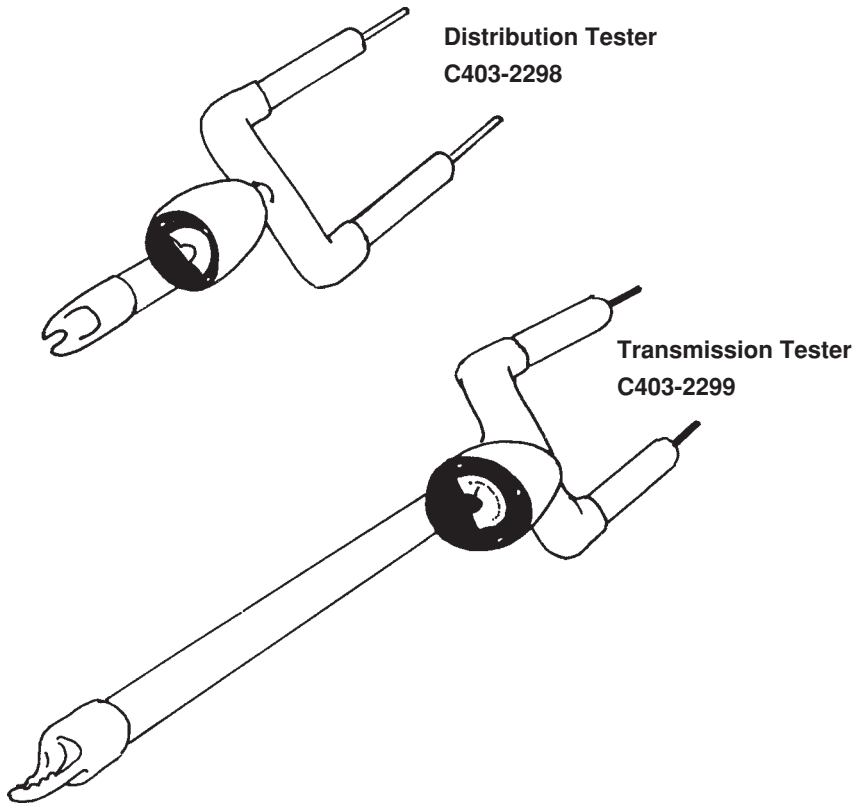
Variances from the "normal" characteristic curve shape indicate damaged insulators which should be replaced.

Work Procedures

1 Select tester model appropriate to system voltage:

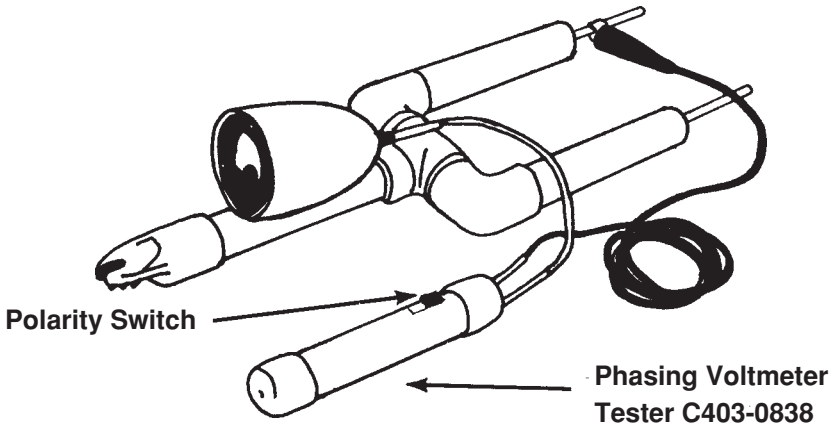
Model	System Voltage
Distribution C403-2298	through 35 kV
Transmission C403-2299	44 kV Through 500 kV

Note also, the two models' full-scale maximums: Distribution model reads up to 11 kV; the Transmission model, up to 16 kV.

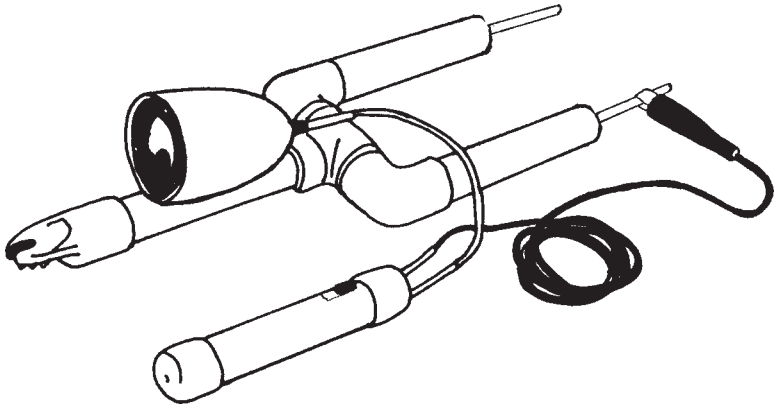


2 Before and after each use, check meter and circuitry for proper operation with a Chance Phasing Voltmeter Tester (PVT):

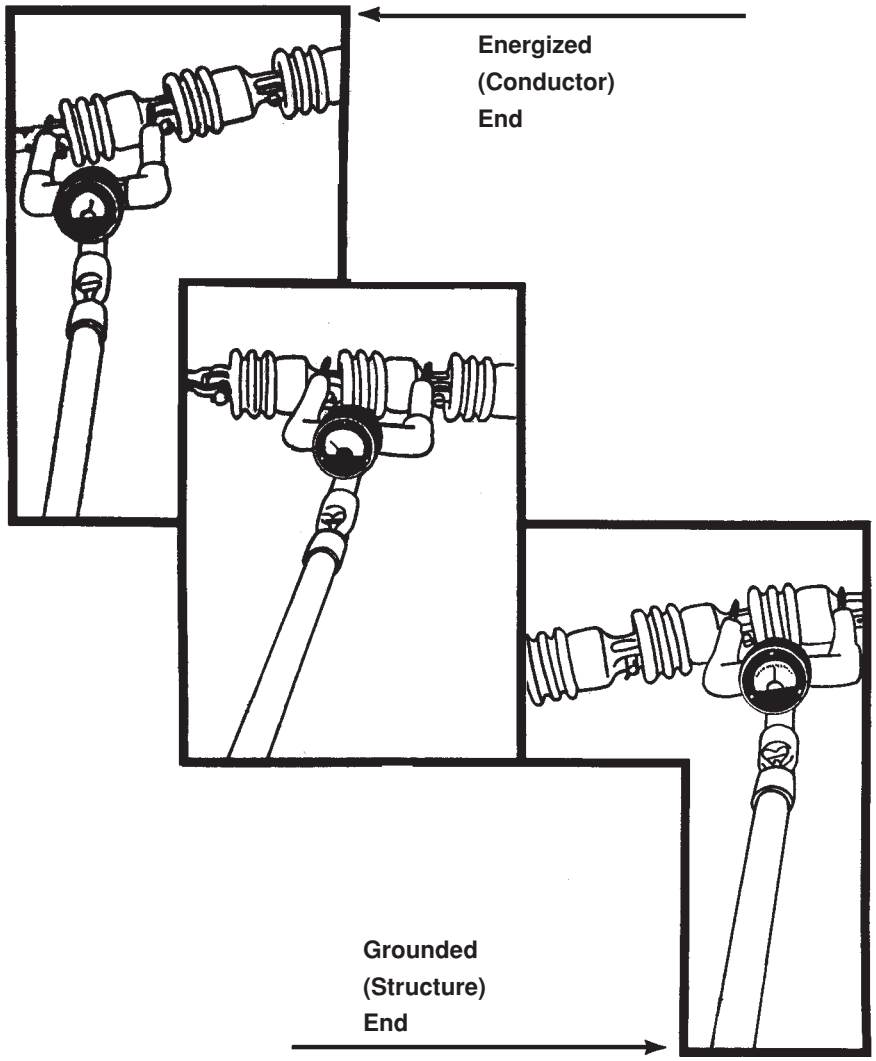
First, remove the plastic weatherseal from the jack behind the insulator Tester meter. Into it, insert the PVT plug lead. Clip the other PVT lead to one of the Insulator Tester probes.



Note the reading on the meter, flip the switch on the PVT to reverse the polarity and note the reading again. Both readings should be within two graduations of each other and in the upper part of the scale. Put the clip lead on the other probe and repeat this procedure. *Replace the weatherseal plug in the meter jack.*



3 Mount Insulator Tester on an insulated hot stick of proper length for system voltage involved. ***At all times maintain proper clearances from energized line and components according to O.S.H.A. or your company rules, whichever distances are greater.***



Test across each insulator in the string and record the readings in order from energized end to grounded end. **To take a reading: Simply contact, at the same time, both metal end fittings on an insulator with the two tester probes.**

4 Plot a graph of the readings to detect any insulator(s) which should be replaced as indicated by the following guidelines.

Do not expect a zero reading to identify every defective unit. Even if punctured, an insulator probably will not be shorted completely and some voltage still will pass across it.

Consider as damaged any insulator which produces a reading 30% or more below the characteristic curve shape established by others in the string.

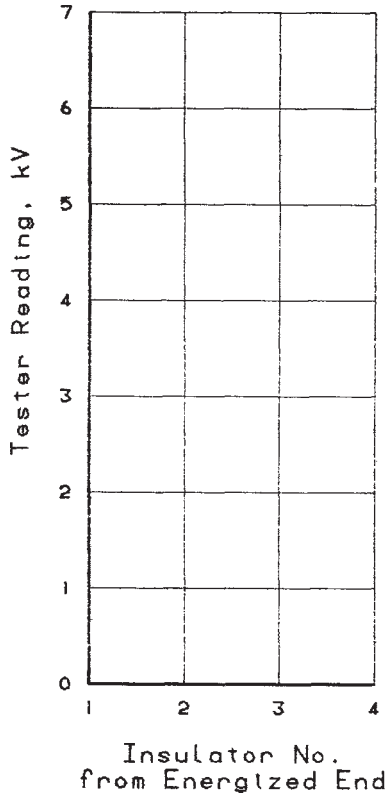
In the case of one defective unit, the other insulators' readings increase to compensate, shifting the curve to higher values.

In the case of multiple defective units, comparing readings to a reference curve previously developed from a string with all good insulators provides the best means for interpretation.

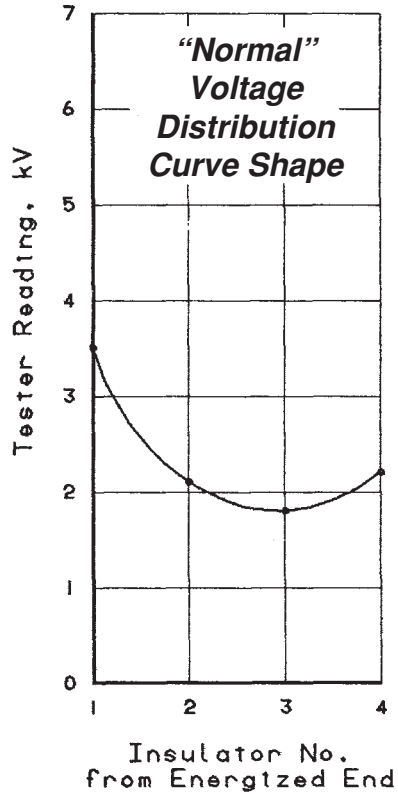
NOTE: These are examples only. The values plotted are not significant, but the curve shapes are. These plots are given to illustrate how to locate damaged insulators by deviations from the "normal" (or characteristic) curve shape.

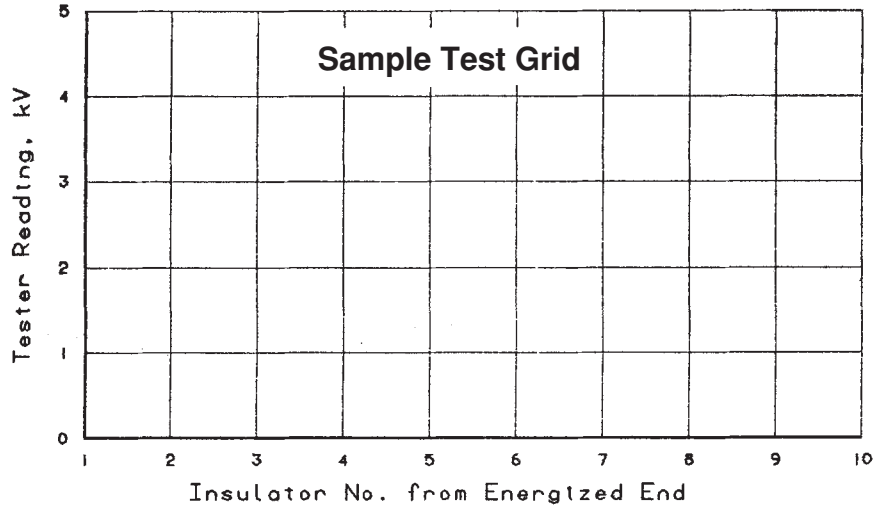
(See following pages for more test examples.)

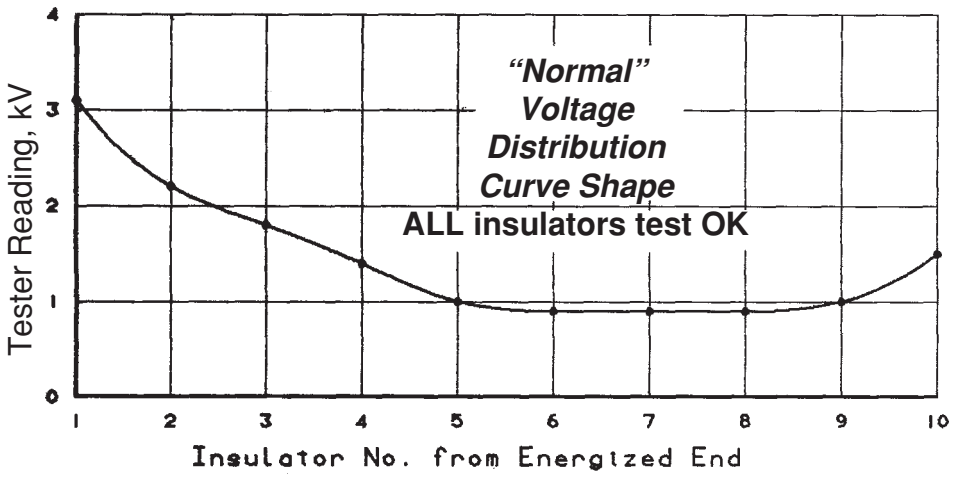
Sample Test Grid

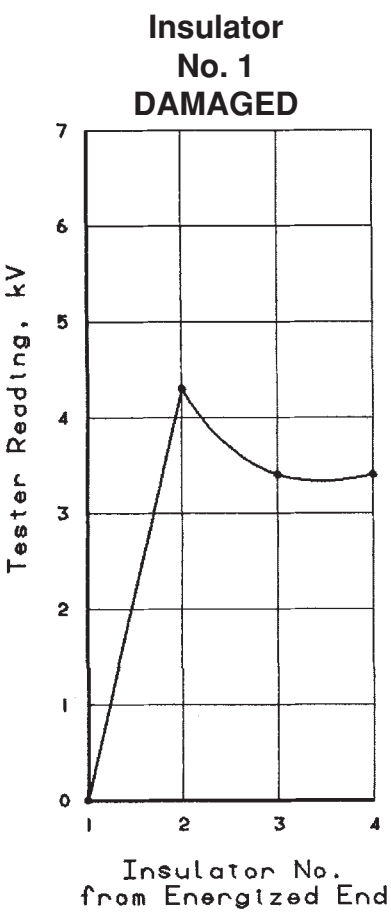


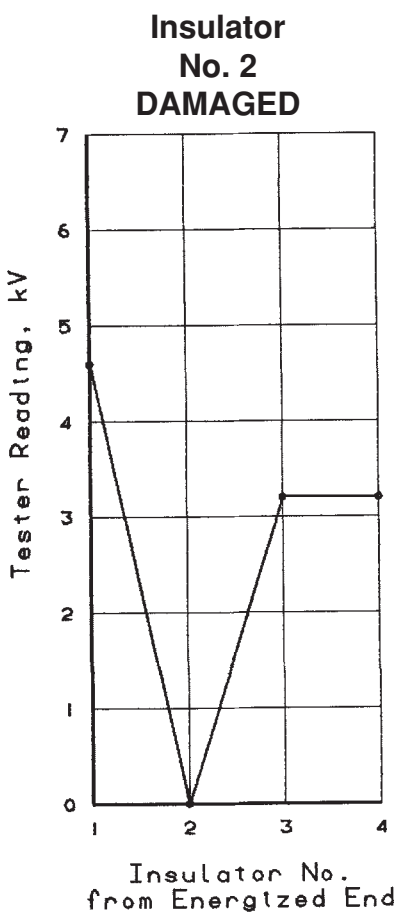
All Insulators OK

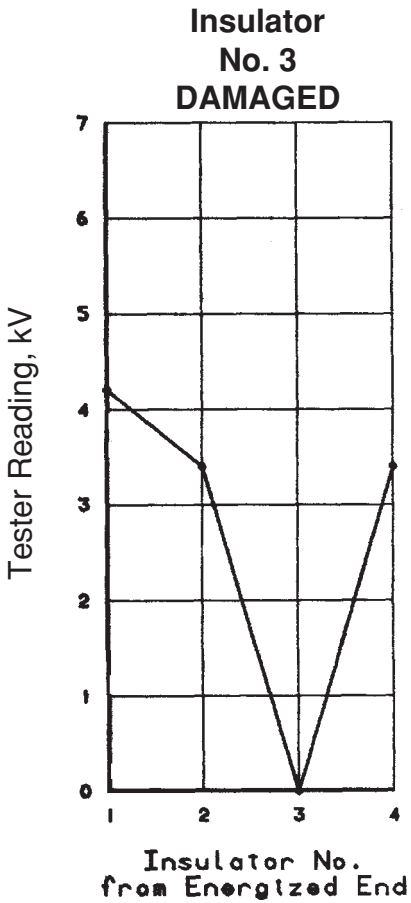


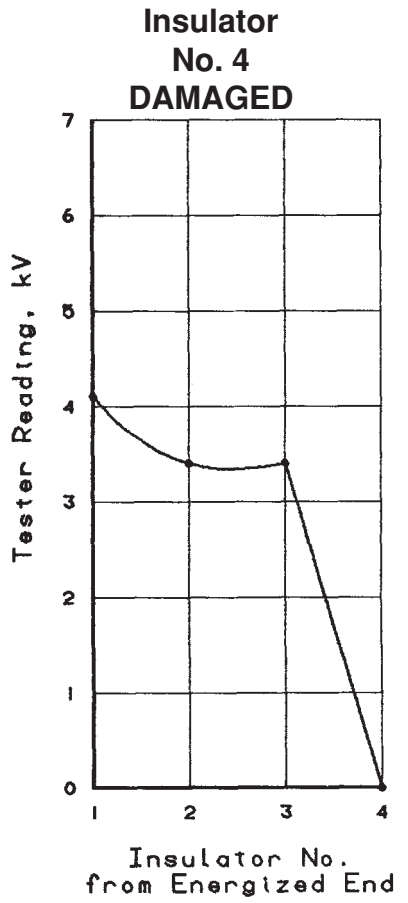

Sample Test Grid
Tester Reading, kV
Insulator No. from Energized End

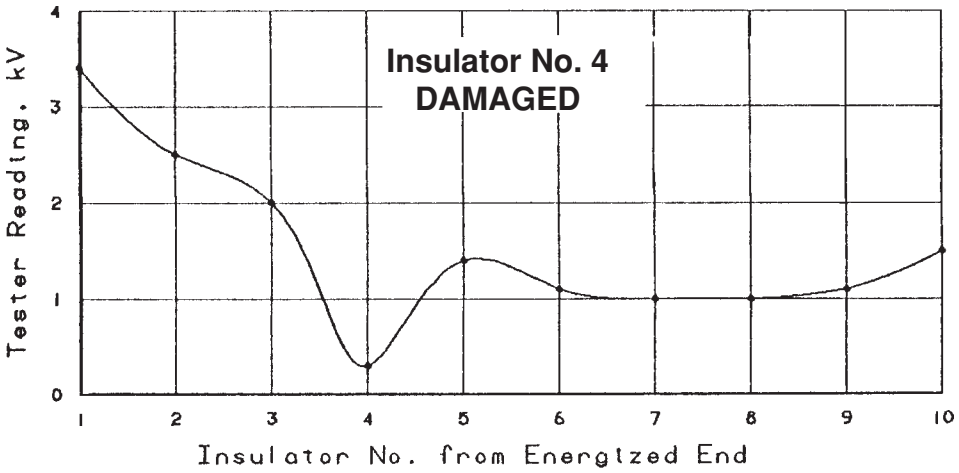

"Normal"
Voltage
Distribution
Curve Shape
ALL insulators test OK
Tester Reading, kV
Insulator No. from Energized End

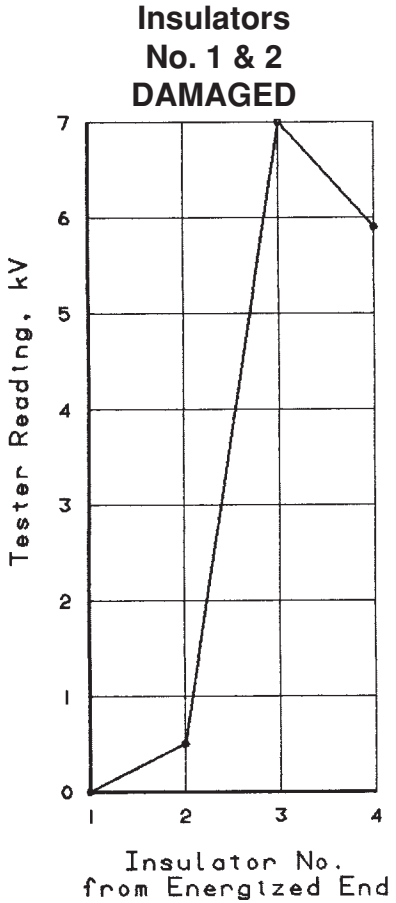

Insulator
No. 1
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End

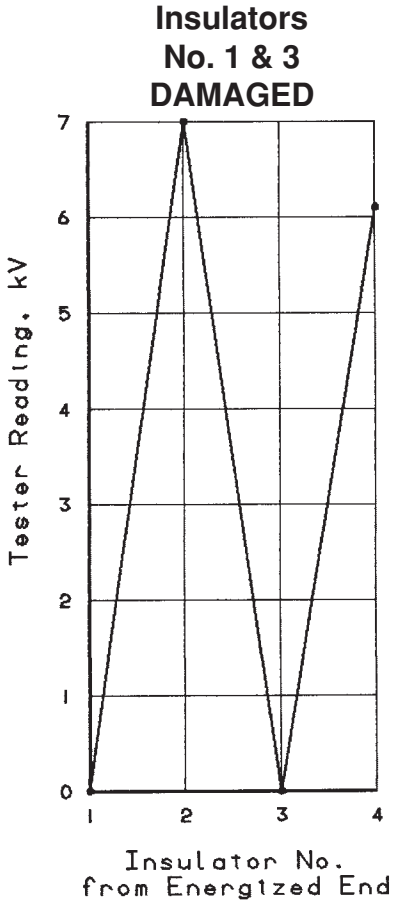

Insulator
No. 2
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End

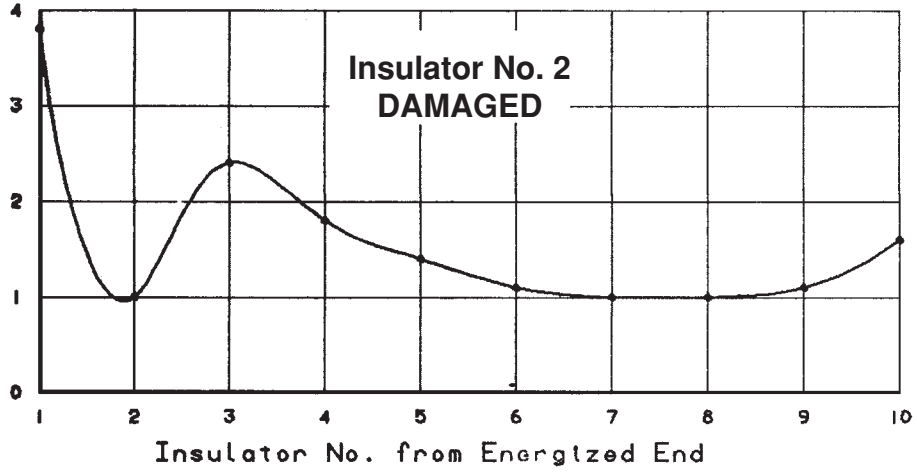

Insulator
No. 3
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End

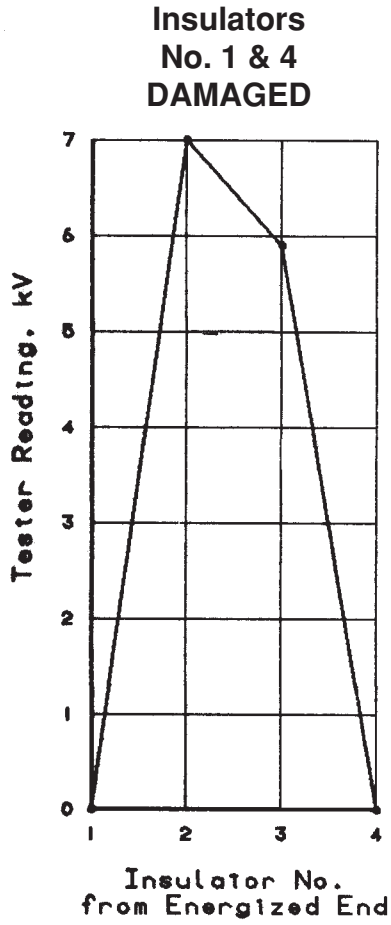

Insulator
No. 4
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End

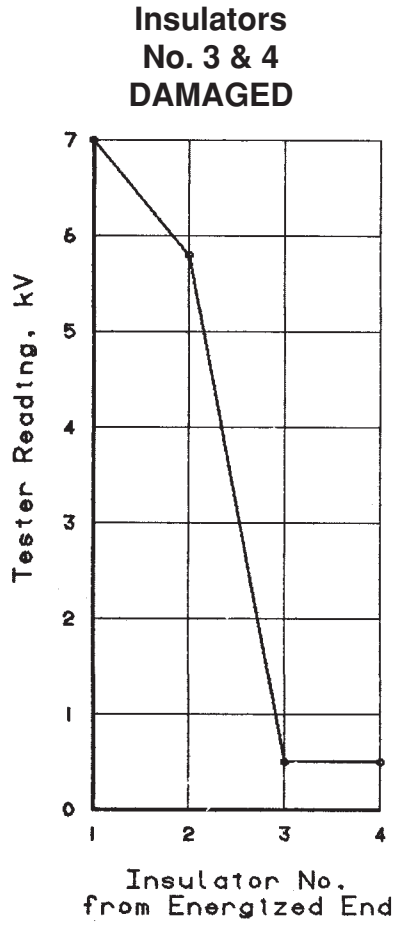

Insulator No. 4
DAMAGED
Tester Reading, kV
Insulator No. from Energized End


Insulators
No. 1 & 2
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End


Insulators
No. 1 & 3
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End


Insulator No. 2
DAMAGED
Insulator No. from Energized End


Insulators
No. 1 & 4
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End


Insulators
No. 3 & 4
DAMAGED
Tester Reading, kV
Insulator No.
from Energized End