

This is really important! The 2nd phase/ground fault does not go BOOM!

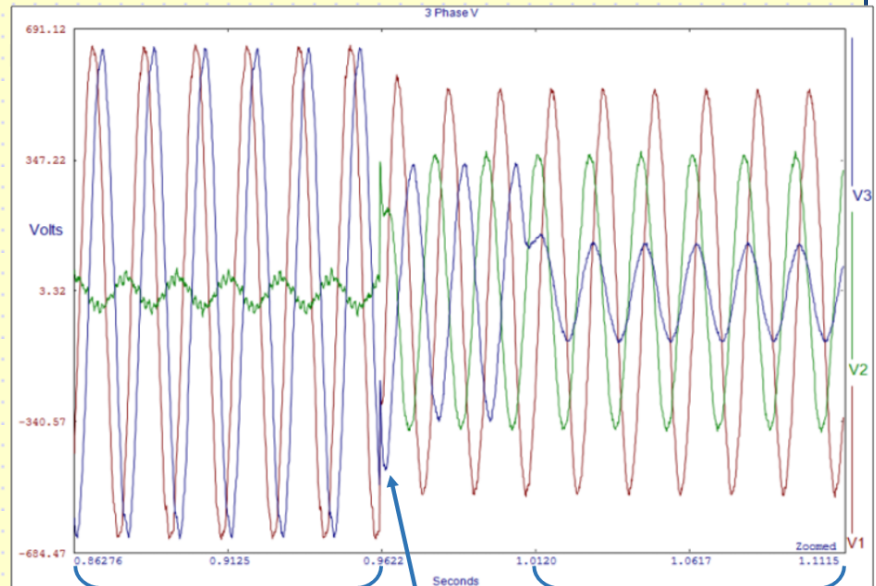
Phaseback VSGR

closes at .9622 approx.

What happened after that?

Phaseback VSGR corrected the phase to ground fault. A second phase to ground fault tries to develop. Phaseback does not allow it.

The ARC FLASH EVENT is prevented!



0.86276s to 0.9622s:
Phase-to-Ground Fault
on Phase B (green)

0.9622s:
VSGR Begins Reacting to Voltage
Imbalance, Correction Occurs

1.0120s to 1.1115s:
Phase-to-Phase Fault
on phases B and C (blue)

See Ryan Davidson's explanation below. **Good job Ryan!**



"When the phaseback closes, the secondary current in the transformer is common to all 3 phases, since they are in series. This means there is a voltage on the secondary that induces a voltage on the primary side to boost the voltage on that grounded phase. Then it looks like there is another fault. 2 phases are in sync so could they be shorted together here?" *****One Correction:** the two phases would short together without the **Phaseback VSGR**.*** See next page for a different event with some interesting details that give a little better picture of how **Phaseback VSGR** fixes the problem.

www.phaseback.com

www.cycates.com

Cy Cates 832 647 4606cell cycates@cycates.com

It is important to understand that:

Ungrounded Systems– The second phase to ground fault is most likely an ARC FLASH in every case.

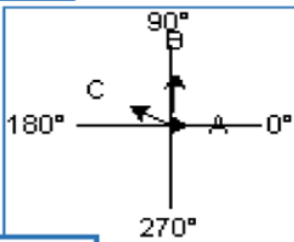
Grounded Wye Systems- The first phase to ground fault is likely to be an ARC FLASH in every case.

PHASEBACK OFF

Phase Angle Distortion

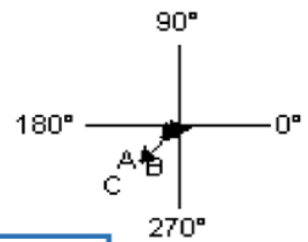
Phase	Volts	Angle
1->A	123V	0°
2->B	469V	84.3°
3->C	360V	151°

Imbalance = 61.036%



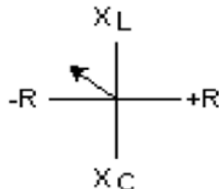
Phase	Amps	Angle
1->A	875uA	218°
2->B	471uA	243°
3->C	2.00mA	228°

Imbalance = 79.384%



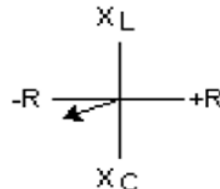
61% Voltage Imbalance

Phase A Impedance



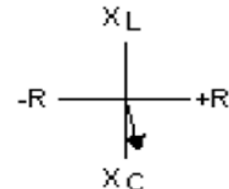
Amplitude = 141k Ohms
Angle 141°

Phase B Impedance



Amplitude = 995k Ohms
Angle 200°

Phase C Impedance



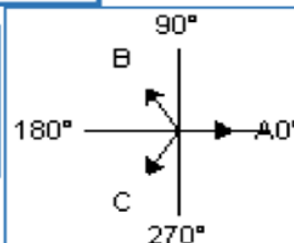
Amplitude = 179k Ohms
Angle 283°

PHASEBACK ON

Phase Angles Corrected

Phase	Volts	Angle
1->A	257V	0°
2->B	282V	123°
3->C	281V	236°

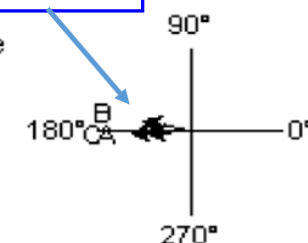
Imbalance = 6.101%



Voltages Balanced using the combined current from all three phases

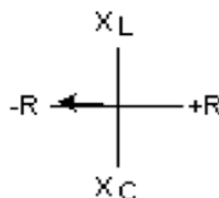
Phase	Amps	Angle
1->A	167mA	185°
2->B	188mA	167°
3->C	225mA	182°

Imbalance = 16.386%



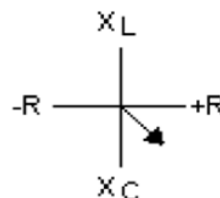
Voltage Imbalance Corrected

Phase A Impedance



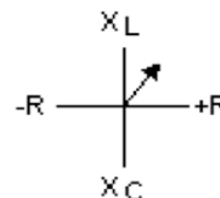
Amplitude = 1.53k Ohms
Angle 174°

Phase B Impedance



Amplitude = 1.49k Ohms
Angle 316°

Phase C Impedance



Amplitude = 1.24k Ohms
Angle 53.8°