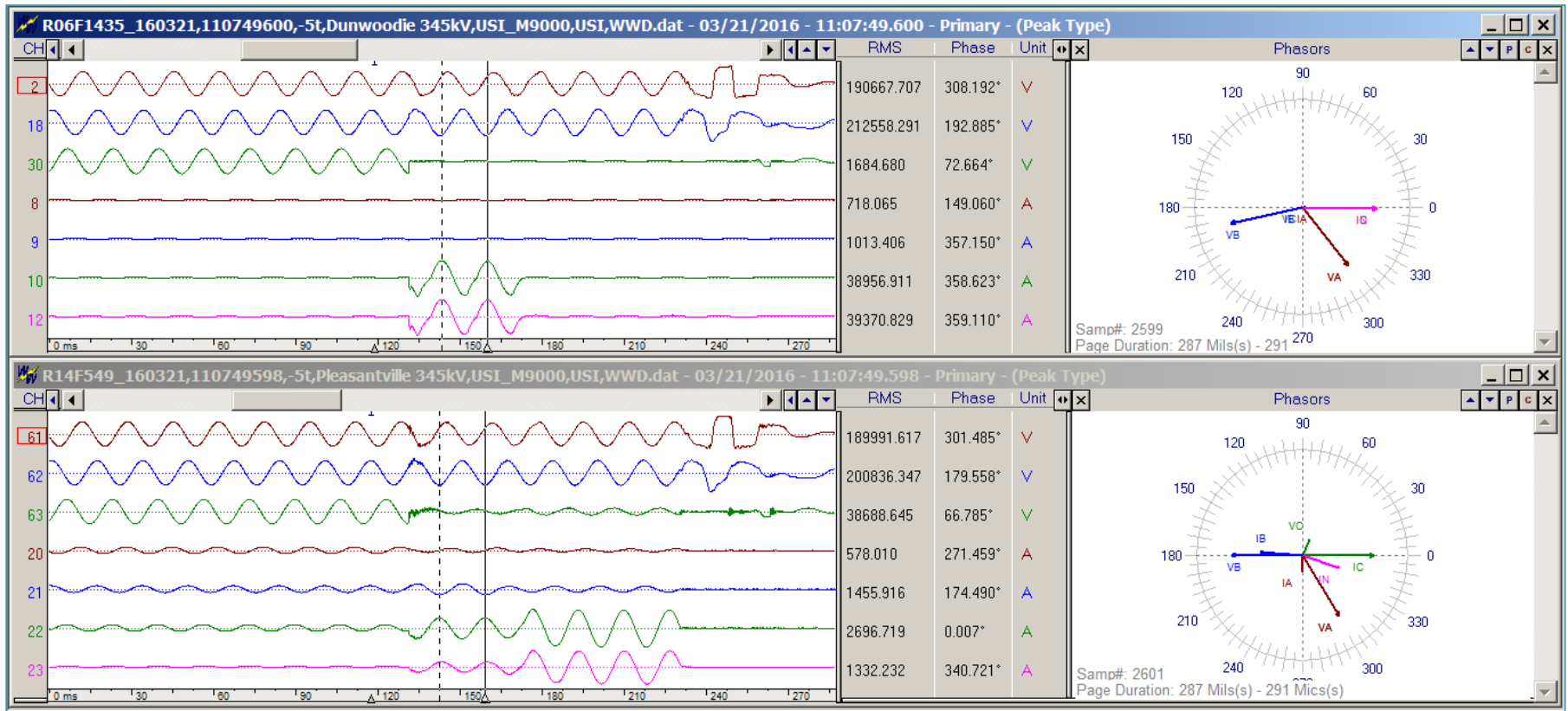
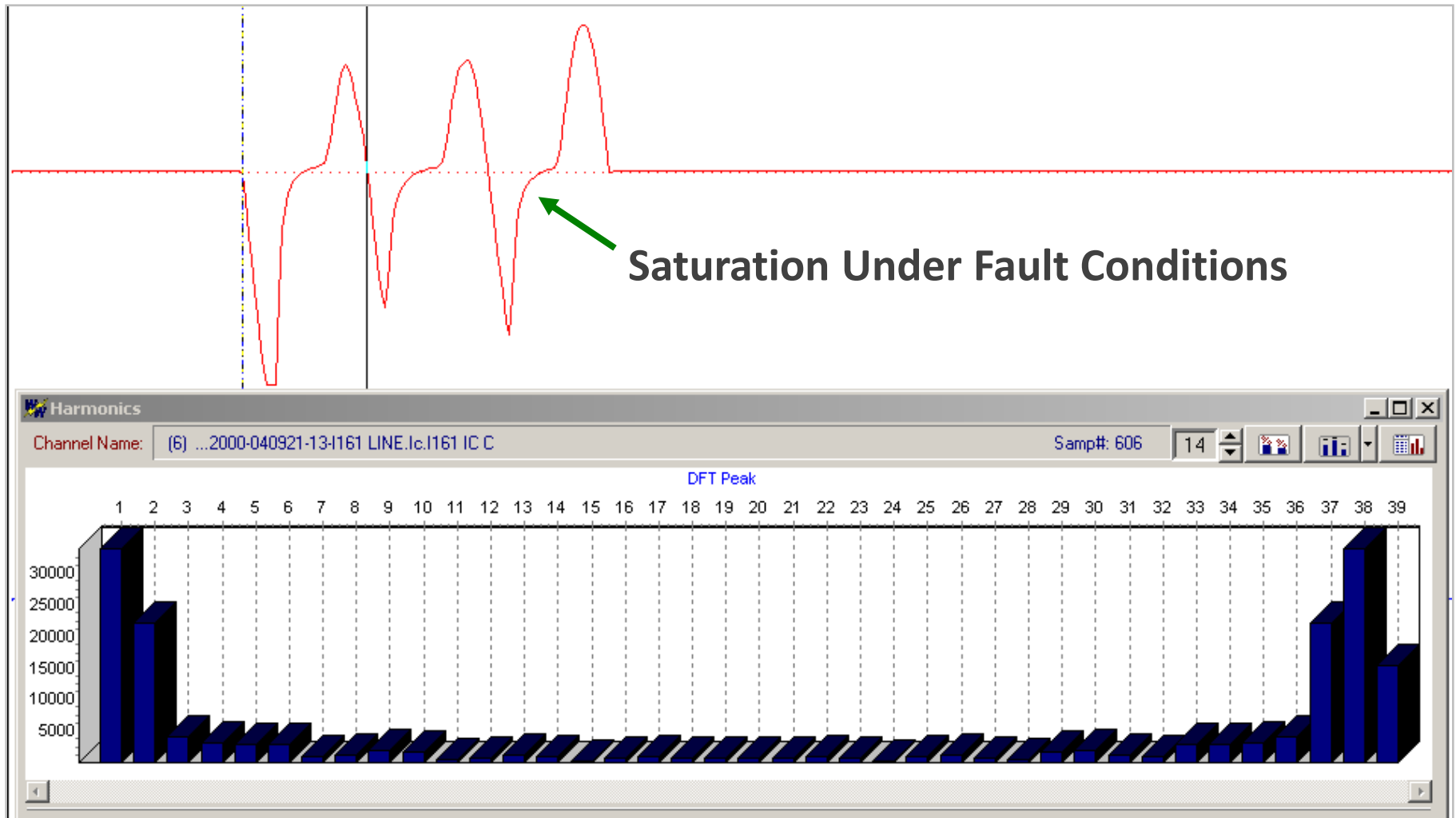


Fault and Disturbance Signatures



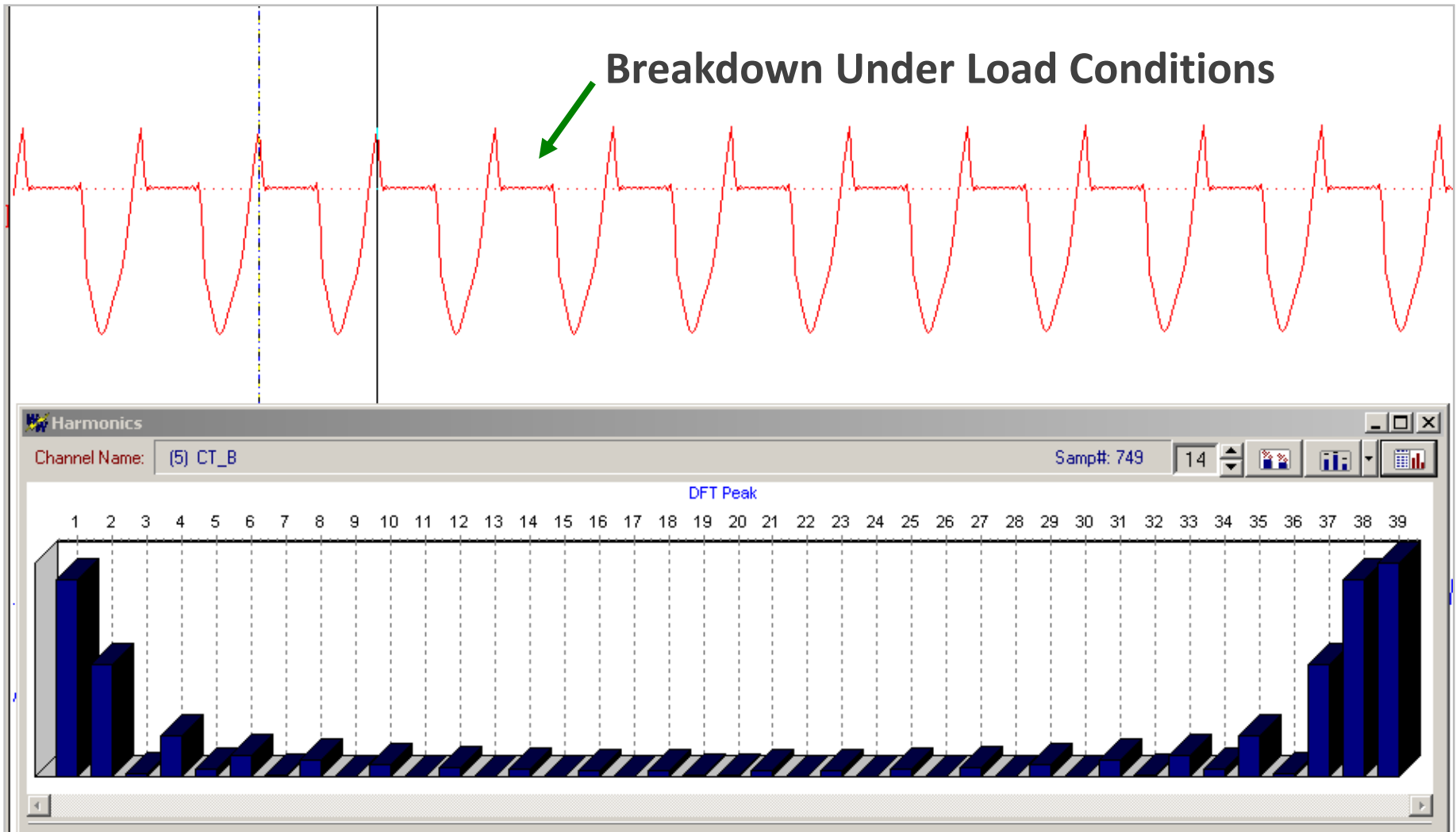
Captures from the Wavewin Software

Saturation from Main Instrument CTs



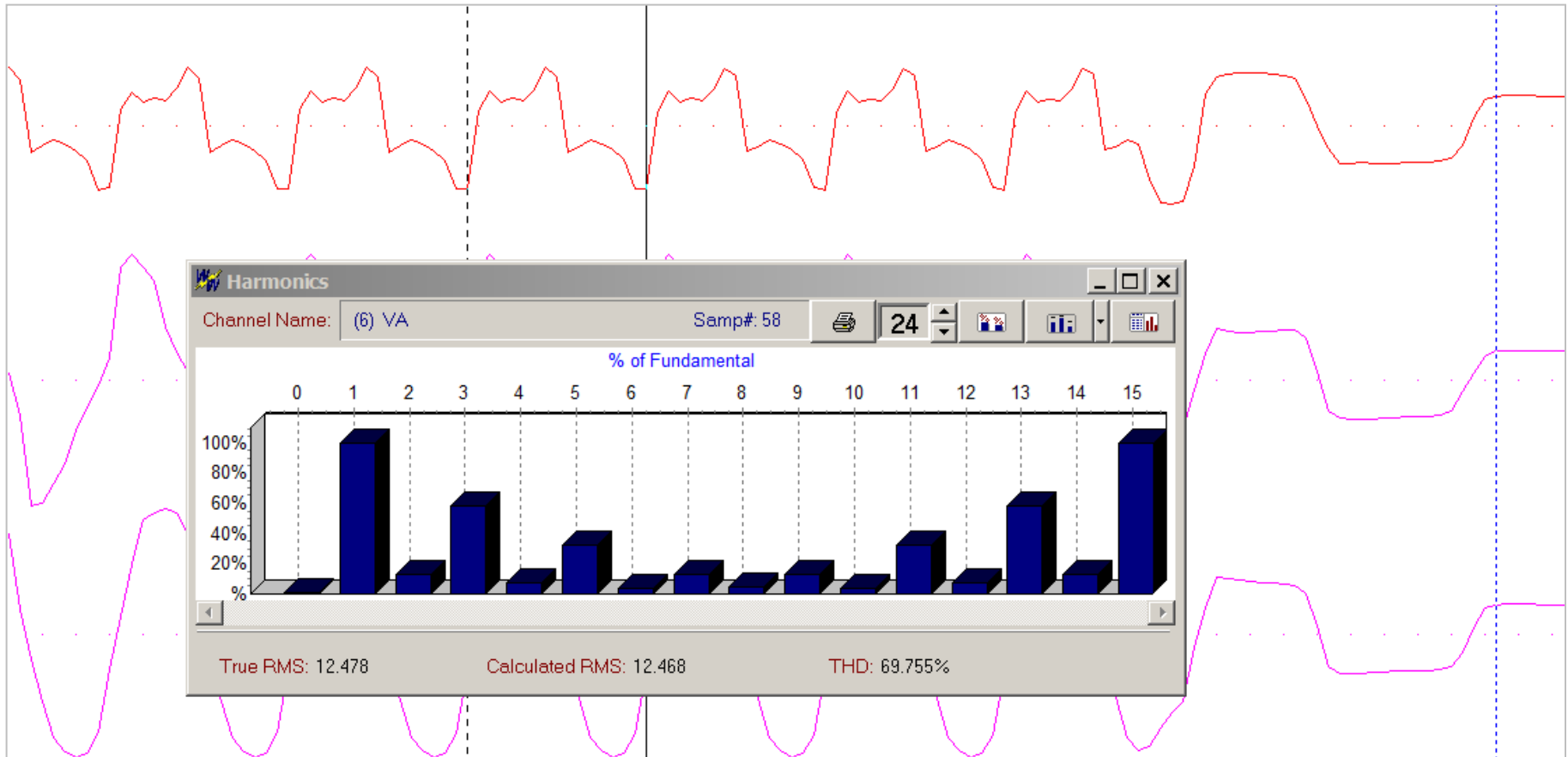
Decaying Harmonics: Major Second with supporting DC

Breakdown from Secondary Split Core CTs



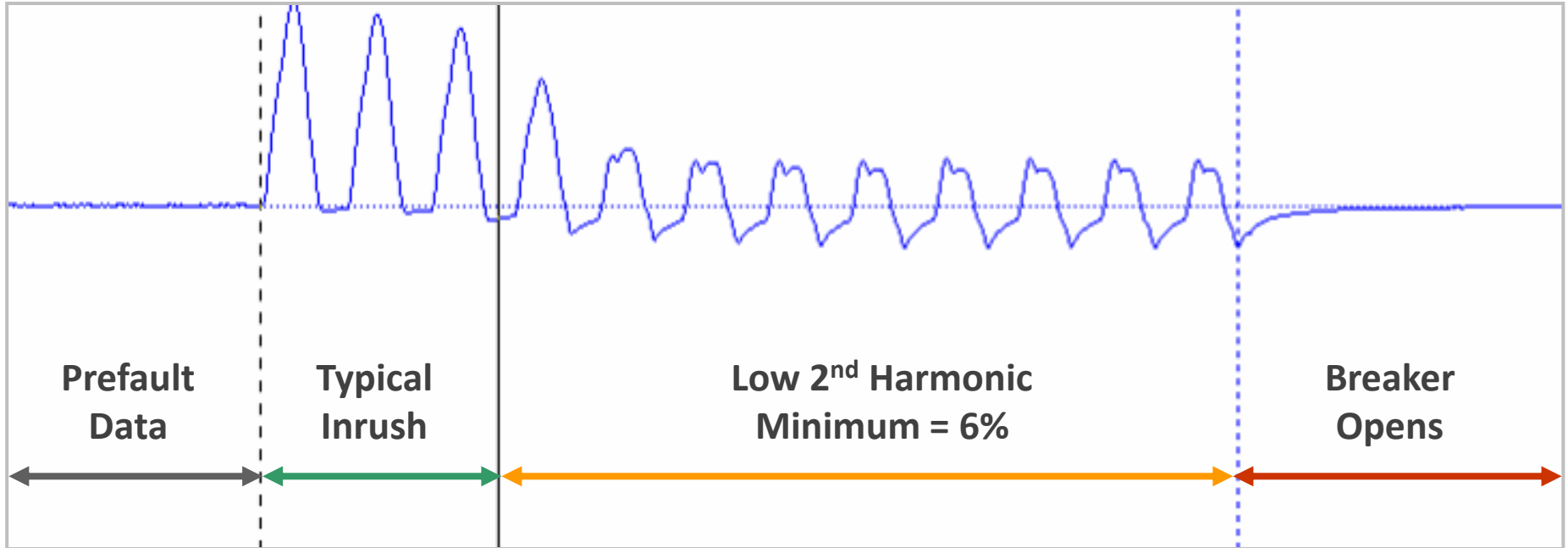
Even Harmonics: Major DC with supporting Second

Ferro Resonance from Main Instrument PTs



Odd Harmonics: Major Third with supporting Fifth

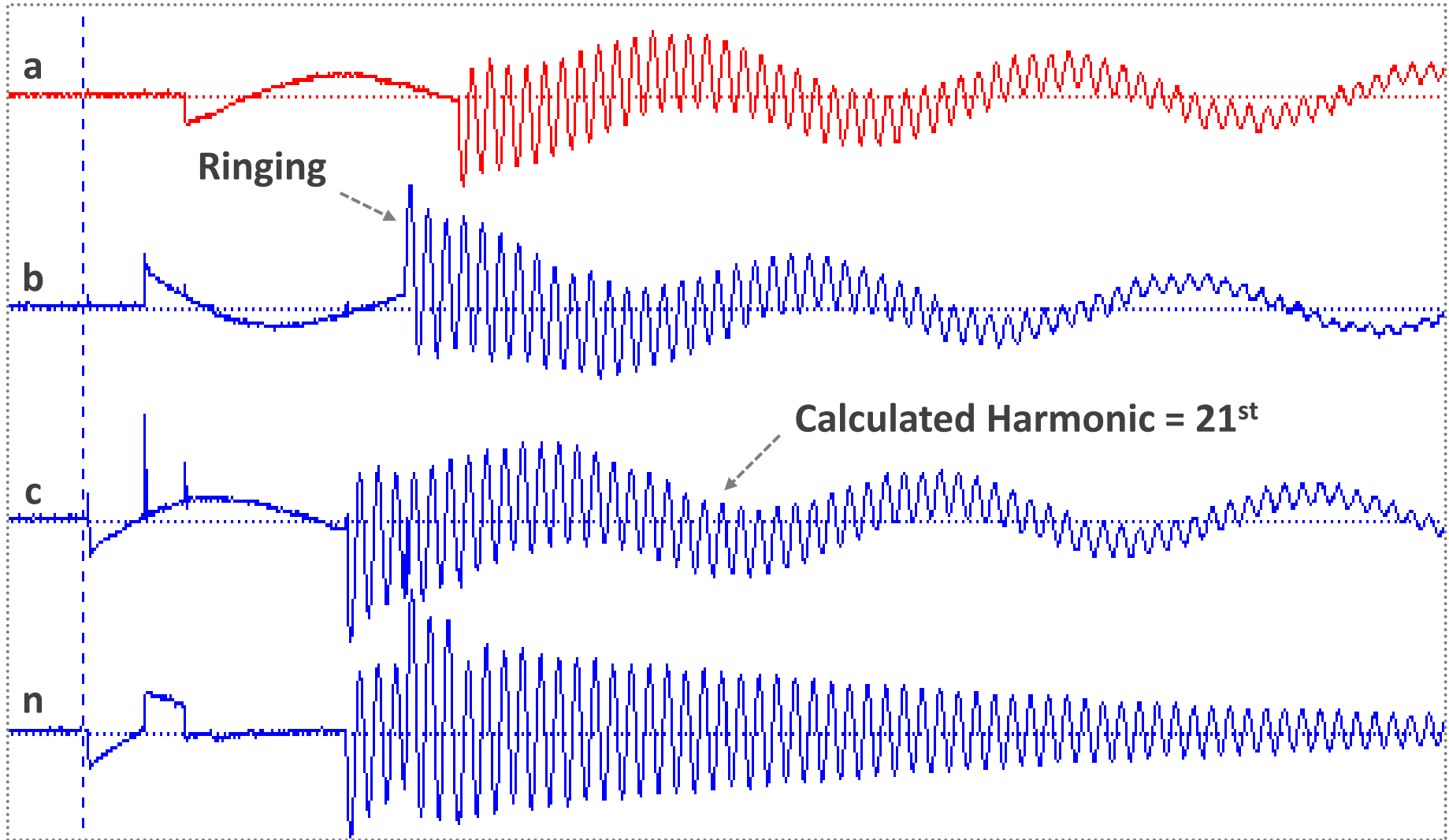
Inrush from Energizing 345kv Transformers



Differential Relay Trip Operation while Energizing a 345 kV Transformer due to Large, Fully Offset DC

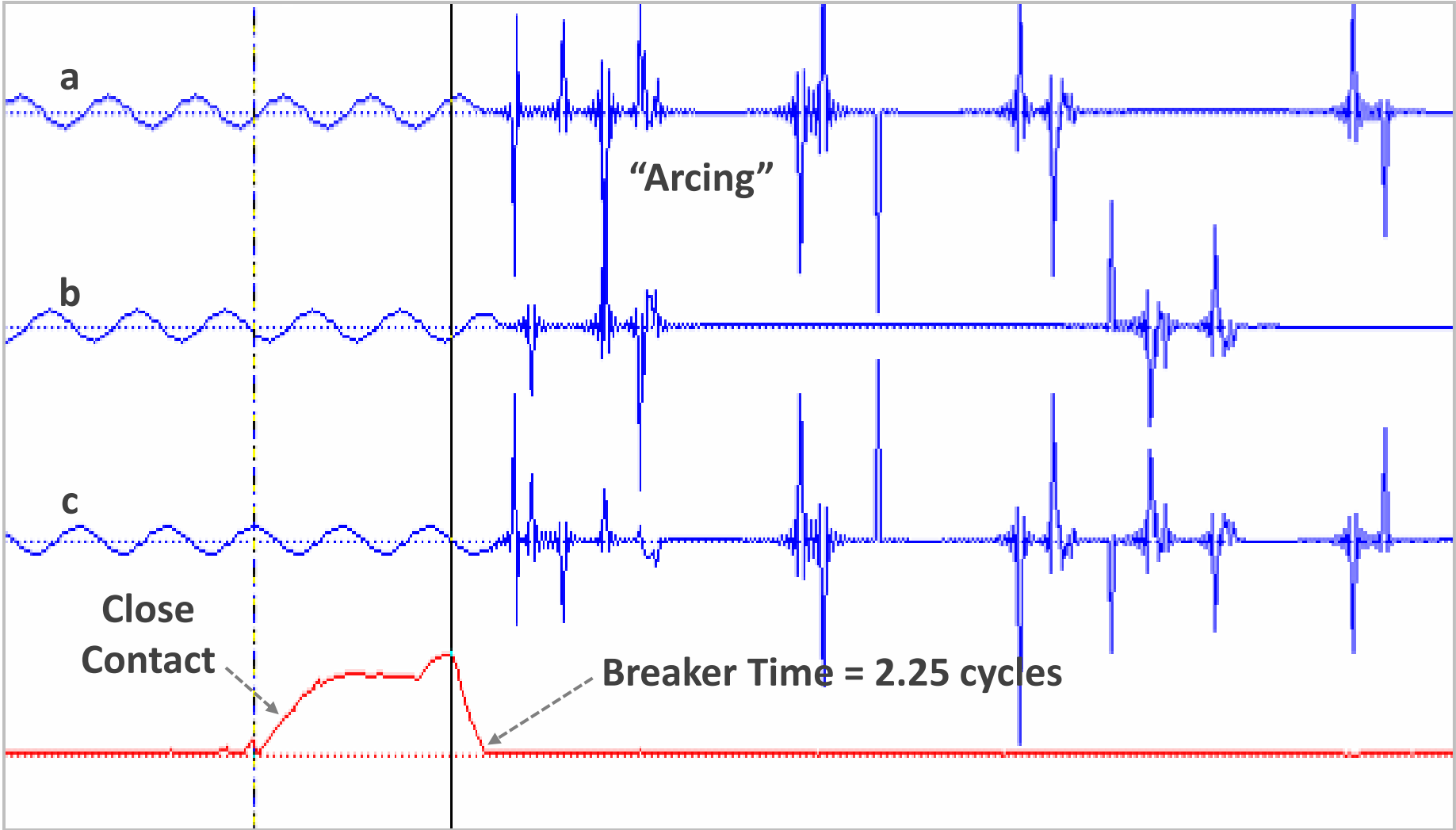
CT Magnetized and Failed to Provide 2nd Harmonic Restraint

Ringling from 345kV Capacitor Banks at Cut-In



Cap Bank Ringing at the 21st Harmonic

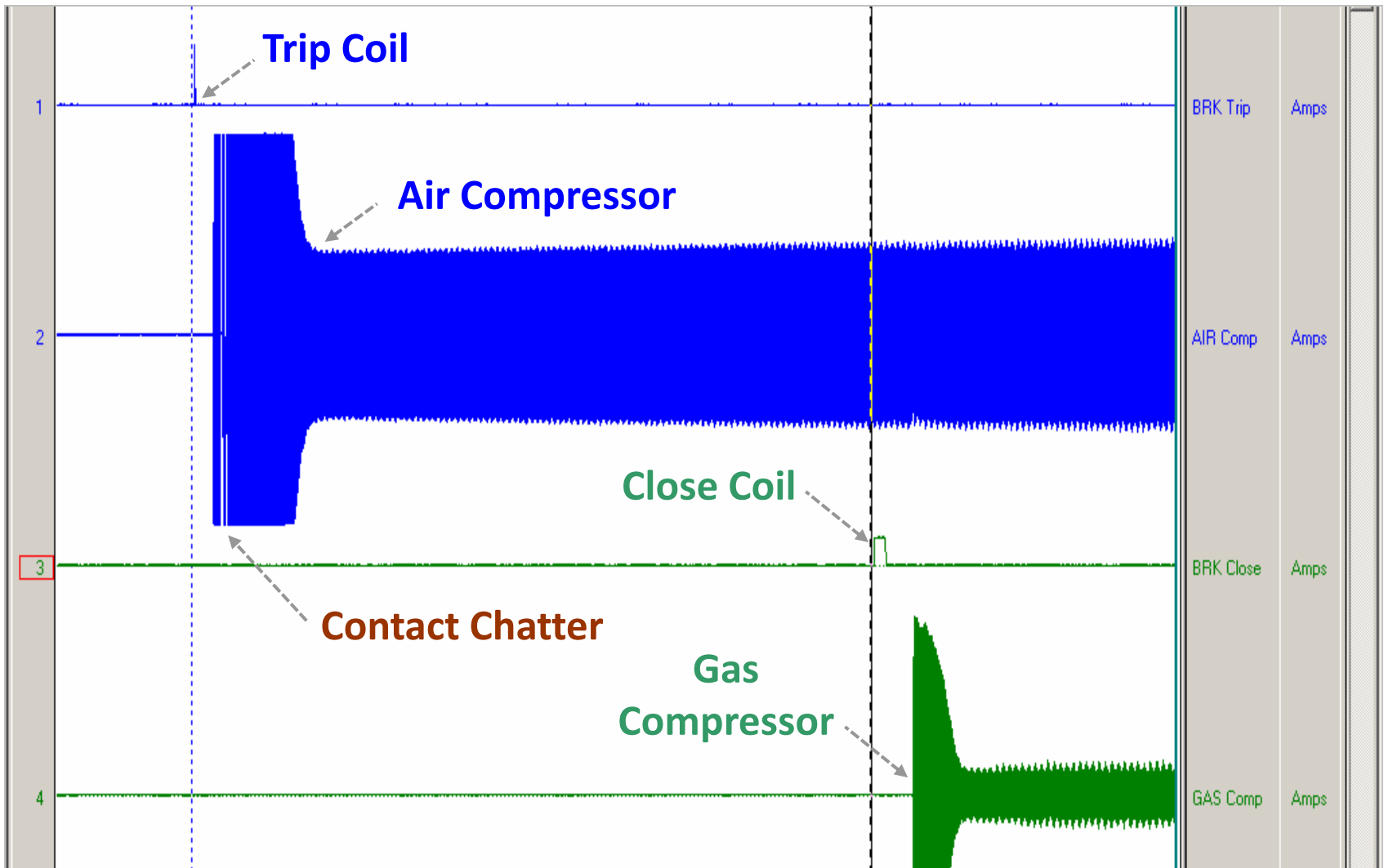
Arcing from 27kV Vacuum Tube Breakers



Symmetrical Pulses (they come in the same way they go out)

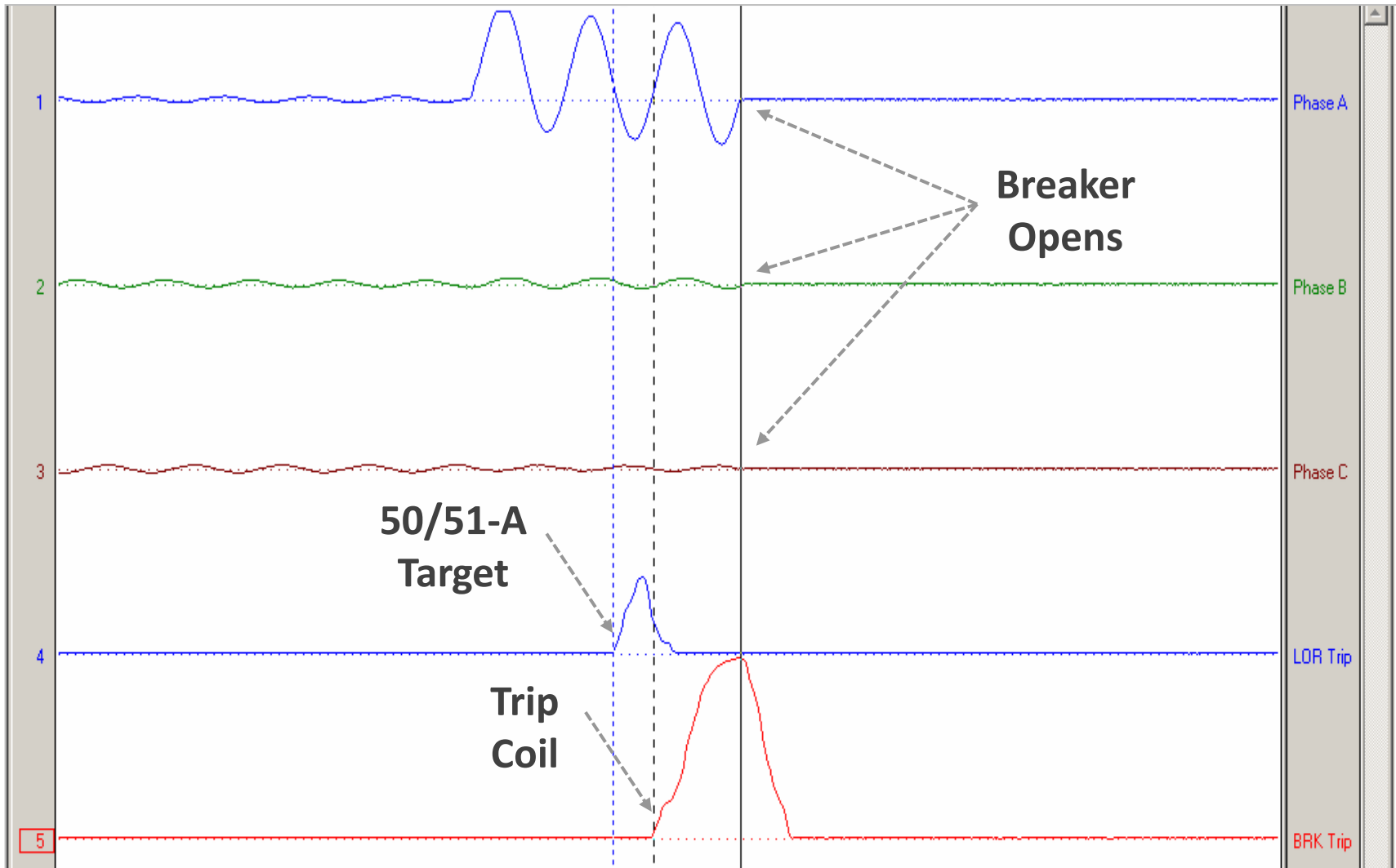


Signatures from 345kV Breaker Operations



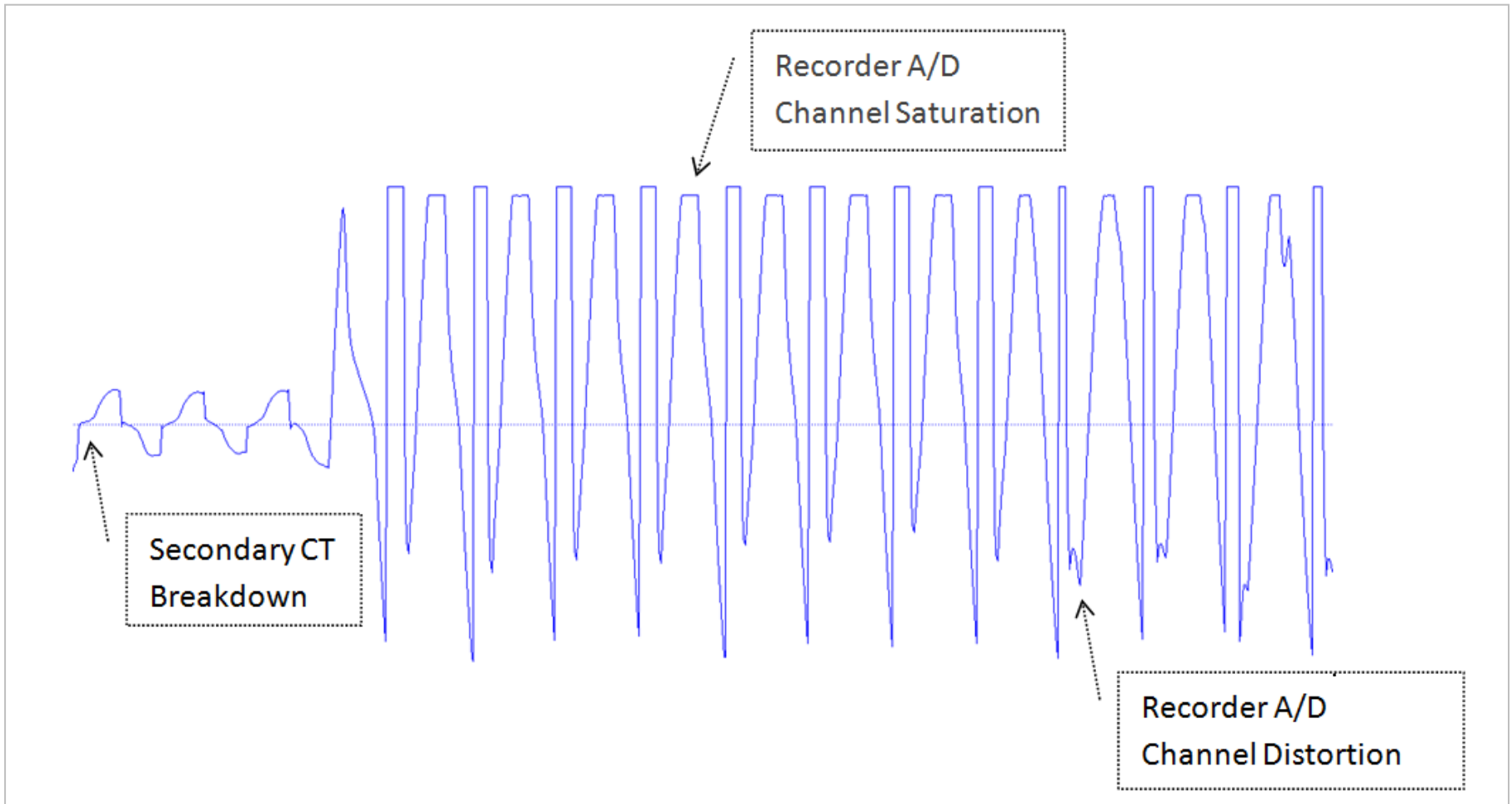
15 Seconds Capture showing Air Compressor Contact Chatter

Signatures from Electromechanical Relays



Protection System Timing from Relay and Breaker Targets

Signatures from Digital Fault Recorders



Waveform Capture Showing Errors from A/D Channels

Signature Recognition

