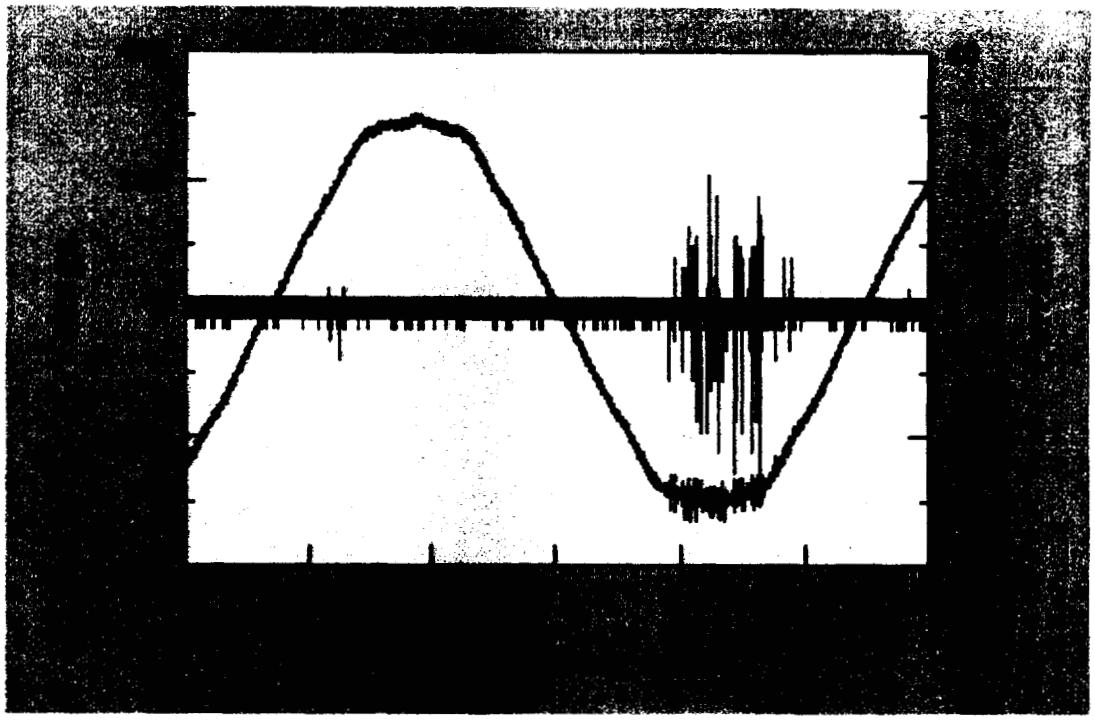

Figure 11. Oscillogram of voltage from phase A to B (blue) and current in phase A (red) during scintillations.

Flashing

The flashing events usually occurred after the sample has been scintillating for some time. As the name suggests what is seen is a single flash of light with an accompanying popping sound. When flashing begins to occur on a sample there are usually many seconds or even minutes between events. However, as time continues the frequency of these events increases to the point where there may be several events per second. Most samples would go through a period of tens of seconds of rapid flashing followed by several minutes of dormancy. Figure 12 shows an example of a flashing event captured by video recording. The flash often showed up in only one frame with the framing rate being 50 frames per second (1 every 20 milliseconds). None of the flashing events caused a circuit breaker to open. The longest wet test conducted was 25 minutes.

The oscillogram (Figure 13) shows that the waveform during a flashing event is that of a classical arcing event [3]. The blue line represents the voltage between the two pre-damaged wires and begins with a normal 400 Hz sine waveform. However in the next cycle the voltage collapses into a classic arc waveform with a relatively constant arc voltage of ~ 100 volts. The voltage then returns to the normal sine waveform. Looking at the red line representing the current in the wire, there is little to no current to the left. During the arcing event the current rises to a peak of 65 amperes and then returns to zero current as the voltage waveform returns to normal.

3. Cobine J. D. Gaseous Conductors, Dover Publication, New York, 1958, pgs. 348 and 353.