

Document Title: EA002 - Using Synchrophasor Data to Analyze Concurrent Fault Events

Category: Event Analysis

Time Horizon: Operations Assessment

Party Involved: American Transmission Company

Event Date: unknown

Event Description: A 69Kv line trip occurred during a storm where the fault was cleared properly by the line protective equipment. Within seconds an area generator trip was observed. When comparing the synchrophasor data it was clear that the unit trip occurred within cycles of the transmission fault indicating the two events were most likely related.

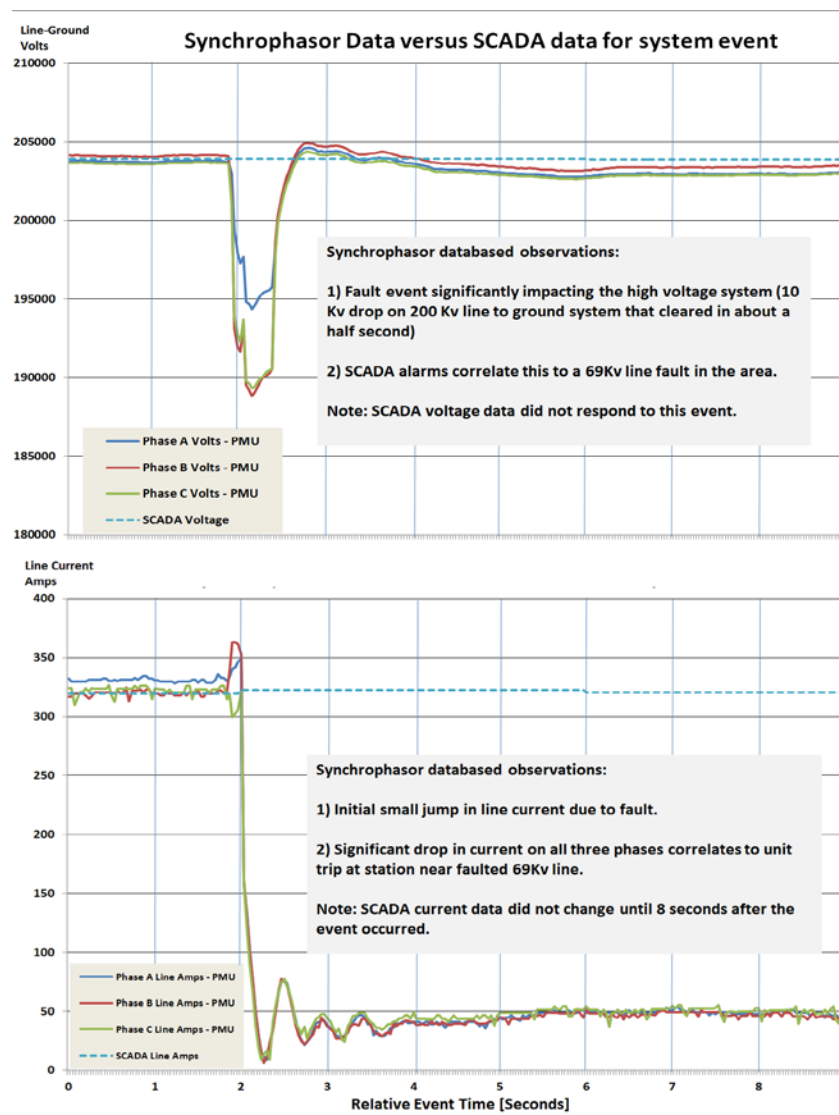


Figure 1 – ATC Fault Analysis Using Synchrophasor Voltage Data

Operational Value

SCADA data can sometimes provide insights into the cause of events but the relatively slow scan rate of 2-4 seconds is not adequate to analyze events when trying to correlate cause\effect relationships. In this case the initial assumption was made that the two events were not related and that the unit trip was most likely at a slightly different time and related to a separate storm related cause. From a plant standpoint they do not have visibility on transmission system events outside their switch yard so they would have had no idea that the initiating 69Kv fault had occurred.

By correlating the times and reporting to the plant operator that the cause was most likely a fault 30 miles away on the underlying 69Kv system it allowed them to further troubleshoot and identify problems that they may have otherwise not understood to be an issue.

Background

The mission of the North American Synchrophasor Initiative (NASPI) Control Room Solutions Task Team (CRSTT) is to work collectively with other NASPI task teams to advance the use of real-time synchrophasor applications for improving control room operations and grid reliability. This team utilizes its experience and regional diversity to provide advice, direction, support and guidance to NASPI stakeholders and other organizations involved in the development and implementation of real-time synchrophasor applications.

This is one of a series of operational use case documents being developed by CRSTT members to describe the various manners in which grid operators and electric utilities are using synchrophasor data to provide value in the Operations Horizon. Existing versions of these papers, along with other CRSTT work products can be found on the CRSTT page of the NASPI website (<https://www.naspi.org/crstt>).

References