**Highlights**

**Paper EPSR-S-20-03485 – Total AC Interferences Between a Power Line Subject to a Single-Phase Fault and a Nearby Pipeline with Multilayered Soil**

* A modified equivalent circuit model with frequency-dependent parameters based on the EMTP/ATP is used to accurately determine transient induced voltages in the interfered installation due to lightning discharges.
* A case study is discussed, based on real project data of a right-of-way shared between a 138 kV double circuit transmission line and a 14" pipeline, with a complex approximation layout.
* It was found that the lightning discharge waveform and the soil resistivity determines both the peak values and the spatial distributions of the transient induced voltages.
* Considerably large stress voltage values were found along the entire pipeline path when conductive coupling phenomena were evaluated.