# AC Mitigation PIPELINE INTEGRITY

AC mitigation is designed and installed to decrease the induced voltage on the pipeline. This may be accomplished by the installation of different grounding techniques such as linear zinc ribbon and/or grounding rods attached to the pipeline with decouplers for DC isolation. With our exceptional commitment to safety, Mears delivers innovative AC mitigation services from field surveys to design, installation and commissioning.

Personnel Safety-15 Volts AC-AMPP requirement

Mears has 20 years of AC assessment and design experience



# AC MITIGATION SERVICES:

- Assessment of electromagnetic interference effects on proposed and existing pipelines
- Field surveys to determine AC voltages induced on proposed and existing pipelines (RAP Sheet)
- Analysis of AC safety and AC corrosion or pipelines

- Design, installation and commissioning of AC mitigation systems
- Design and installation of monitoring systems for induced AC effects

## BACKGROUND

Pipelines sharing paralleling or crossing HVAC transmission line rights-of-way may be subjected to electrical interference from capacitive, electromagnetic inductive, and conductive effects. Electromagnetic induction is the primary effect of the HVAC transmission line on the buried pipeline during normal (steady state) operation.

Electromagnetic induction is due to the magnetic field produced by AC current flowing in the phase conductors of the transmission line, coupling with the pipeline and inducing voltage on the pipeline.

Conductive interference results from currents being conducted through the soils and into the pipeline. Conductive effects are primarily a concern when a fault occurs in an area where the pipeline is near the transmission line and the fault currents in the soil are high.

# Mears AC assessments and designs comply with federal, state and industry standards

### PROBLEM

If these electrical effects are great enough during steady state normal operation, a possible shock hazard exists for anyone that touches an exposed part of the pipeline such as a valve, CP test station or other above ground appurtenance. The voltage a person is exposed to when touching or standing near the pipeline is also a concern.

During steady state, normal transmission line operation, AC current density at a coating holiday (flaw) above a certain threshold may cause accelerated external corrosion damage to the pipeline. This threshold is often much lower than the 15 VAC guideline for the safety of personnel. In addition, damage to the pipeline or its coating can occur if the voltage between the pipeline and the surrounding soil becomes excessive during a fault condition. A phase to ground fault on a power transmission line causes large currents in the soil at the location of the fault and large return currents on the phase conductor and ground return.

Pipeline operators faced with systems that are subjected to stray currents must by federal code have a continuing program to identify, test, and minimize their detrimental effects.

#### THE MEARS SOLUTION

AC mitigation may be designed and installed to decrease the induced voltage on the pipeline. This may be accomplished by the installation of grounding techniques such as linear zinc ribbon and/or grounding rods attached to the pipeline with decouplers for DC isolation. From engineering and field surveying to construction installation, our commitment to safety allows us to deliver unparalleled turnkey AC mitigation design/build services.

# 184 miles of AC corridor assessed by Mears

