

*Power & Peace of Mind:*

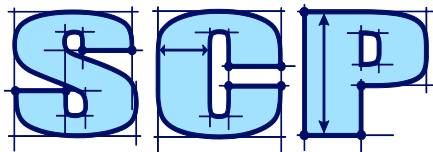
# **Interrupted Potential Survey**

***15<sup>th</sup> Annual KGA EXPO***

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**Christopher R. McKinley, P.E.**

Chief Operating Officer



**Southern Cathodic**  
PROTECTION

Southern Cathodic Protection Company  
780 Johnson Ferry Road NE Ste. 225  
Atlanta, GA 30342  
Office: (404) 252-4649 • Fax: (404) 252-1824  
[www.cathodicprotection.com](http://www.cathodicprotection.com)

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# Interrupted Potential Survey

What is an Interrupted survey versus what we're doing now?

What options do we have to comply pipeline safety requirements for considering IR?

How else can interrupted surveys benefit the pipeline?

Some Fundamentals

AMPP Criteria for Testing

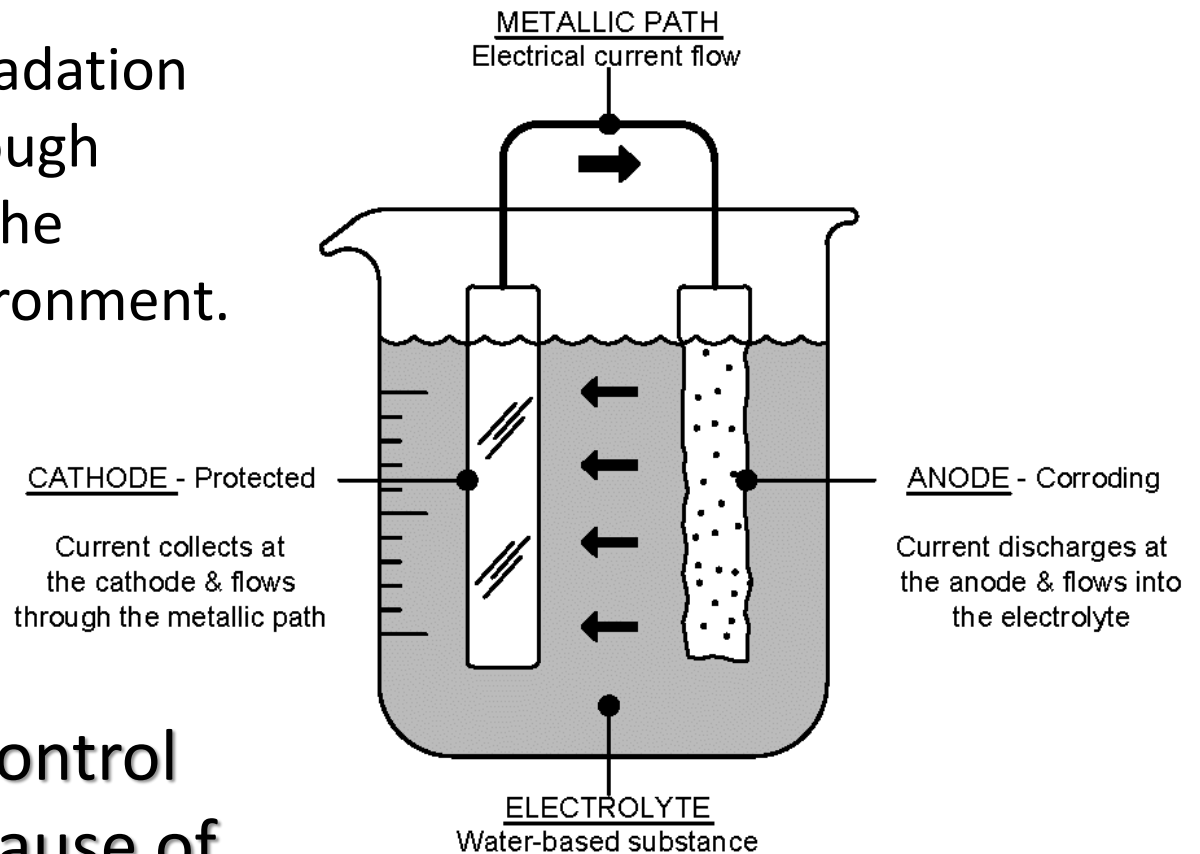
The Interrupted Survey



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# Some Fundamentals

**Corrosion** – Degradation of a material through interaction with the surrounding environment.

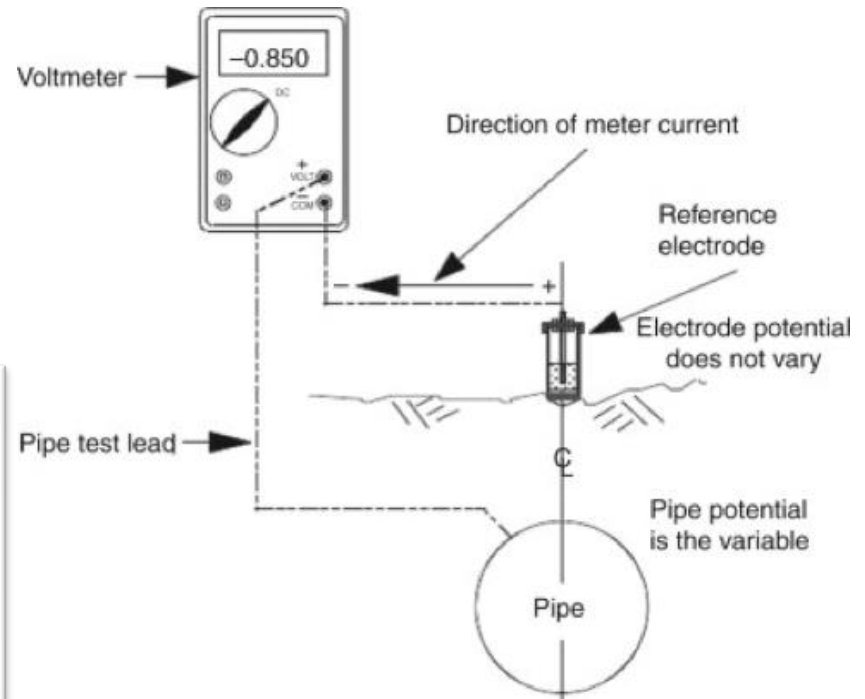
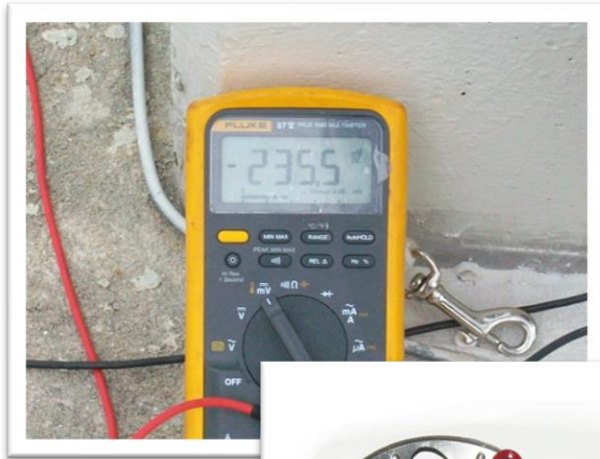


Corrosion control happens because of **Cathodic Polarization**

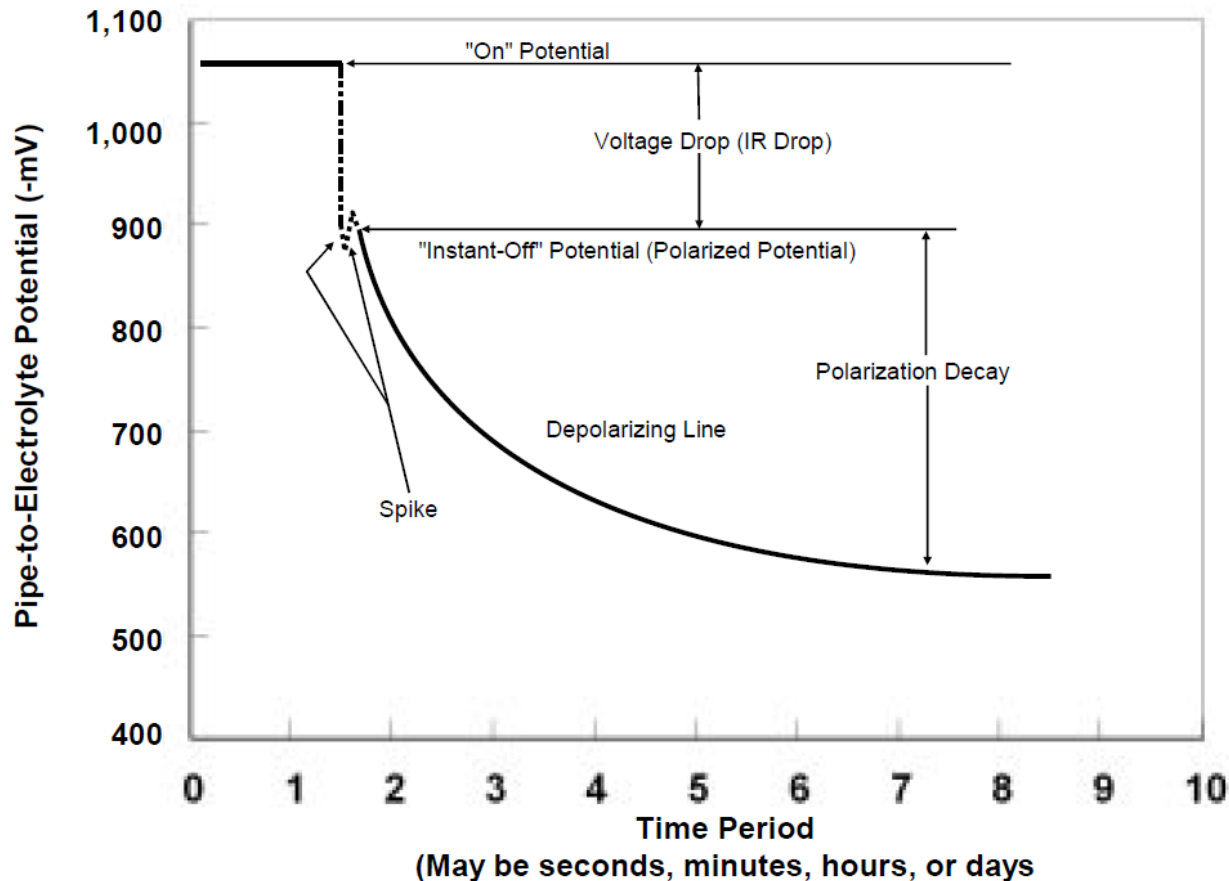


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# •Equipment & Test Arrangement



# •Representation of Polarization Decay



# •Measuring Polarization – The IR Error

- Energized potential measurements have Error
- Soil and Water have Resistance to electrical current flow
- Error must be **“Considered”**



# AMPP Criteria for Testing

**Formerly NACE International**

**Standard Practice 0169**

*Control of External Corrosion on  
Underground or  
Submerged Metallic Piping Systems*

**Responsible for Writing  
Standards for Corrosion  
Control**



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# •Acceptable Criteria – On Potential

**Section 6.2.2.1.1** - A negative (cathodic) potential of at least 850 mV with the CP applied.....

.....Voltage drops other than those across the structure-to-electrolyte boundary must be considered for valid interpretation of this voltage measurement.

# • Acceptable Criteria – Interrupted Potentials

**Section 6.2.2.1.2** - A negative polarized potential of at least 850 mV relative to a saturated copper/copper sulfate reference electrode.

**Section 6.2.2.1.3** - A minimum of 100 mV of cathodic polarization between the structure surface and a stable reference electrode contacting the electrolyte. The formation or decay of polarization can be measured to satisfy this criterion.

# Interrupted Survey

## The Most Accurate Method:

- Cyclical Interruption of All Direct Current Sources
- But not the only way...



# •Problem Solving with IR Corrections

## Energized Pipe-to-Soil Potential:

-1030 millivolts versus copper sulfate reference

**Did we meet the criterion?**

**What do you expect to find with interruption?**

***The Interrupted Survey***



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# • Problem Solving with IR Corrections

- Find locations that have eluded effective corrosion control
- Identify Shorted Pipe
- Discover why a segment tends to leak frequently

**Undiscovered problems are found every time the initial interrupted survey is conducted**

***The Interrupted Survey***



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# •The Value of On-Off Surveys

**Have the  
Right Answer  
when demonstrating  
corrosion control  
program effectiveness**

**The knowledge you are  
doing everything you can  
to ensure**

**Public Safety**

***The Interrupted Survey***



Southern Catholic Protection Company  
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# Questions

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# •Bench Test Arrangement



The arrangement is a collection of corrosion circuits

- Water vessel
- Reference Electrode
- Steel Cathode (pipe)
- Zinc Anode
- Copper wire
- Multimeter

*The Interrupted Survey*



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