

# Dwight Nixon

- 20 years experience in corrosion field  
(major chemical production companies)
- 8 years owner/operator of Solutions  
Treating Consultants Ltd.
- Bachelor of Science in Biology
- Involvement with NACE  
conferences/seminars

# Corrosion Inhibition Chemicals and Monitoring

## Shallow Gas Gathering System Integrity

Medicine Hat

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Solutions Treating Consultants Ltd

# Mechanisms

- Dissolved Gases
- Water Chemistry
- Solids
- Bacteria

# Location

- Areas of solids accumulation
- Low spot downstream from wellhead
- Low spot downstream of size transition

# 4 Step Strategy

- Keep water out
- Manage Solids
- Inhibition
- Monitoring

# Keep water out

- No velocity strings / syphon strings
- Wellhead separation
- Corrosion Resistant Materials
- Swabbing

# Manage the solids - Why?

- Strong relationship between solids accumulations and failure incidence
- Interferes with effective inhibition

# Manage the solids - How?

- Prevention
- Aggressive pigging

# Inhibition

- Minimal impact into dirty systems
- Understand the problem
- Match the product to the problem

# Inhibition

- Bacteria

- Why batch and not continuous
- Frequency and Location
- Chemistry
- Application issues

# Inhibition

- Oxygen
  - Sources
  - Prevention
  - Inhibited methanol

# Inhibition

- Conventional Corrosion Inhibitors
  - intended to inhibit against effects of acid gas attack
  - must see the metal
  - batch vs continuous

# Monitoring

- Understand corrosion mechanisms
- Either take the monitoring to the corrosion or bring the monitoring to you
  - bellholes
  - bellied spool pieces
  - recessed fittings at bottom of line

# Monitoring

- Bacteria
  - Sessile vs Planktonic  
(attached vs free-floating)
  - Biobullets
  - Other surface areas  
(measured)

# Monitoring

- Bacteria
  - Most Probable Number (MPN)
  - BART
  - Epi counts
  - Enzymes
  - Organic Acids

# Monitoring

- Corrosion
  - Dissolved ions
  - Weight loss coupons
  - Electrochemical
    - ER
    - LPR
    - Beta foils
    - AC Impedance and Noise

# Measurement

- Ultrasonics
- Xray
- Smart pigs / linologs
  - free swimming
  - wireline conveyed
- Caliper surveys
- UT tool

# Corrosion Monitoring Websites

Caproco	<a href="http://www.caproco.com">www.caproco.com</a>
Cormon	<a href="http://www.cormon.com">www.cormon.com</a>
Corrpro	<a href="http://www.corrpro.com">www.corrpro.com</a>
Metal Samples	<a href="http://www.alspi.com">www.alspi.com</a>
Intercorr	<a href="http://www.intercorr.com">www.intercorr.com</a>
Rohrback	<a href="http://www.rohrbackcosasco.com">www.rohrbackcosasco.com</a>
Corrocean	<a href="http://www.corrocean.com">www.corrocean.com</a>
Baker PMG	<a href="http://www.bakerhughes.com/bakerhughes/pipeline_management">www.bakerhughes.com/bakerhughes/pipeline_management</a>