

Cased Pipeline Assessment

What We've Seen & What Worked

Alabama Public Service Commission Gas Pipeline Safety

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Cased Pipelines

The Casing Problem

Casing Cases

Solution Summary

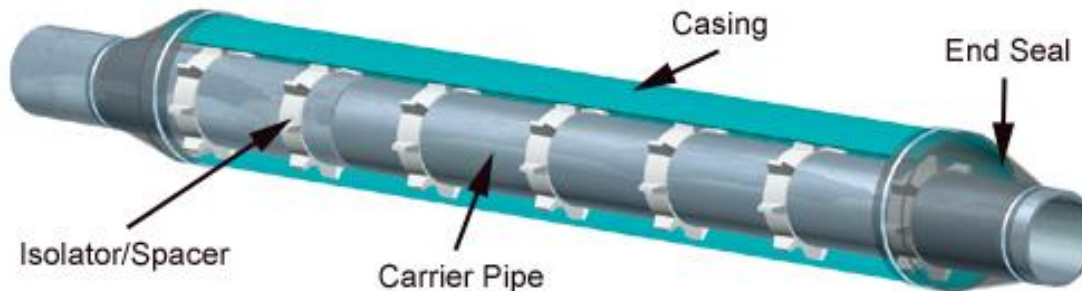
- Looking inside the Casing
- A bit of Regulation

- Our experiences assessing casings

- How Pipeline Safety was addressed

The Casing Problem

Steel Pipelines cased for mechanical protection



www.stuartsteel.com

- **Electrochemically Isolated Space**
- **Difficult Access**
- **Difficult to protect from Corrosion & Prove it**

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• Regulations, Standards & Guidelines

- 192.323 Casing – construction and use
- 192.467(c) Electrical Isolation
- Guidelines for Integrity Assessment of Cased Pipe for Gas Transmission Pipelines in HCAs
- ANSI/NACE Standard Practice 0502-2010 “Pipeline External Corrosion Direct Assessment Methodology”
- NACE Standard Practice 0200 Steel-Cased Pipeline Practices

The Casing Problem

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Experiences with Casings

**A collection of experiences addressing problems
with numerous casing types**

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• Testing ~20 Casings & Direct Examinations

- Old Pipeline, new to Operator
- Line was shut down for testing
- Tested all casings, ECDA
- II Tools: GWUT, Internal Resistance

Results:

- No shorts
- GWUT found coating damage accurately
- 100% DA for pulled segments



•DCVG Finds Indications in Casing

- Long, uncoated Casing
- Casing not shorted
- Congested, urban area
- Approximately 10 faults found in 1000 feet

Results:

- Pressure test segment
- Schedule segment for replacement

• Steel Line in Plastic Casing

- 6" Distribution Pipeline
- Casing ends not sealed
- Line was active – could not immediately shut down



Results:

- Recommended excavation of both ends
- Wash casing & inspect for clean annulus
- Install corrosion coupon, zinc electrode, pipe test leads
- Seal ends

• A Program for Elimination

- Large Transmission Natural Gas Pipeline Network with numerous casings
- Many casings not easily or safely accessible for excavation
- No Shorted segments existed

Results:

- Conducted successful DA for casings in HCAs
- Developed program for elimination of inaccessible and higher risk casings over time – based on risk assessment

•Some Additional Techniques

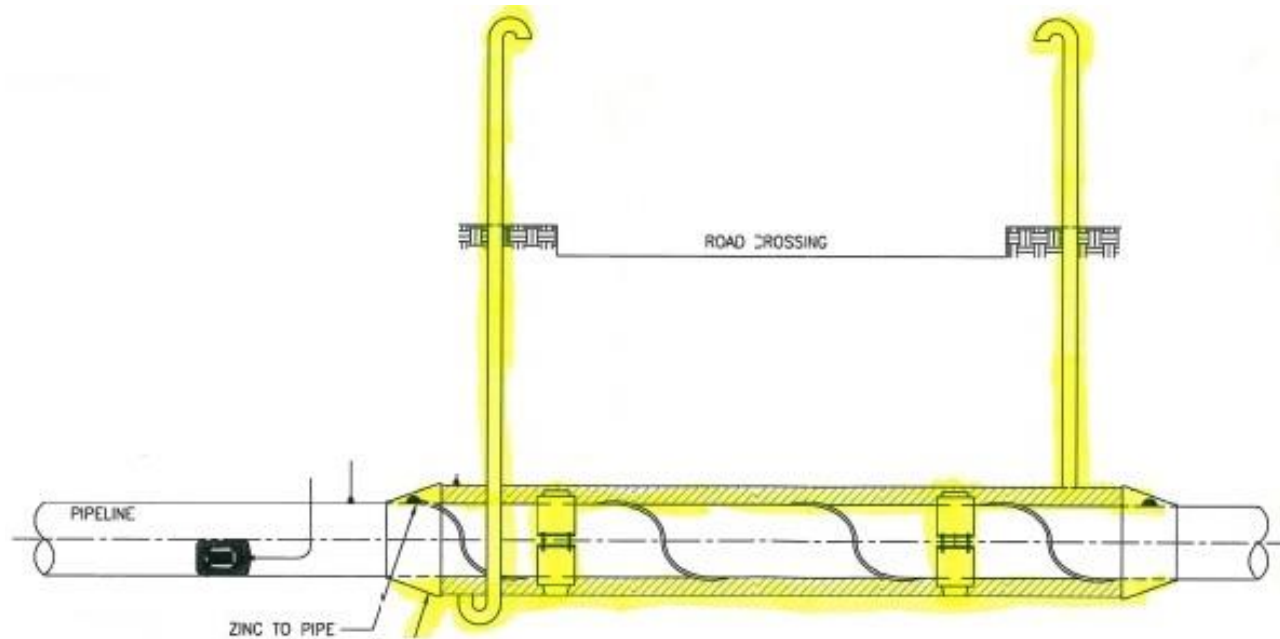
Installation of Casing Filler Materials:

- Corrosion Inhibitors
- Low point corrosion monitoring devices

Weld-sealed annular space & Pressurized

- 192.323(c)
- Low point corrosion monitoring devices

•Casing “Cathodic Protection”



Adventures in Casings

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Solutions Summary

- **When possible, avoid installing new casings**
- **Programs may be developed for elimination of casings**
- **Consider installation of corrosion monitoring devices**
- **Casings may be sealed and pressurized**



Questions

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