

# Casings

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U.S. Department of Transportation  
**Pipeline and Hazardous Materials  
Safety Administration**

"To protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives."



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# CASINGS---BIG PAIN & Other Information

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Shorted  
Casings---  
EVEN WORSE



## 192.465(c)

192.465(c) Except for unprotected copper inserted in a ferrous pipe, each pipeline must be electrically isolated from metallic casings that are a part of the underground system. However, if isolation is not achieved because it is impractical, other measures must be taken to minimize corrosion of the pipeline inside the casing.



# Shorted Casings--- EVEN WORSE

- A shorted casing occurs when there is direct metallic contact between a carrier pipe and a casing pipe.
- An electrolytic shorted casing occurs when an electrolyte such as water, fills the annular space between the carrier pipe and the casing.
- During the review and evaluation of the annual cathodic protection surveys, casings which may be shorted and, as such may affect the cathodic protection of the pipeline segment, shall be identified and listed for additional testing.

What does the operator's procedures require—what is their criteria

100mv difference between casing and carrier

Determine what “Essential the same” means

2 CP Techs will have 2 different numbers

Done this—2 Techs 2 different numbers

1 said 50 mv

1 said 25mv

WHICH IS IT?



# Shorted Casings---EVEN WORSE



The old timers-would use tape coat and make several wraps—eventually building up the “insulator”—when inserted—the wrap would roll back—review your installation records.

The old timers would orange peel the casing and weld to the carrier



# Shorted Casings---EVEN WORSE

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# Procedures

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DO I HAVE A SHORT

Panhandle Eastern Test

Either interrupting current—ie Rectifier and taking reads or add current and interrupt-taking reads on casing and carrier

## Shorted Casings---EVEN WORSE

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For years—we were required to

- Removing the casing
- Clearing the shorted condition.
- Filling the annular space with an approved, high dielectric material .
- Monitoring the casing with leak detection equipment. For gas pipelines, the inspections shall be at intervals specified in CFR 49, Section 192.705 and 192.721.

# Shorted Casings---EVEN WORSE

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Then we were allowed to go straight to monitoring—  
with any leak, would result in a classification of a  
Hazardous Leak—requiring immediate attention

# Shorted Casings---EVEN WORSE

March 11, 2019 another interp was given and required to

Clear the short

Fill with dielectric corrosion inhibitors

Monitor with ILI if applicable

Leak survey

Implementing remedial measures to maintain the carrier pipe  
MAOP based upon suitable remaining strength calculation  
methods

# Shorted Casings---EVEN WORSE

Good Luck

Inspectors will be reviewing records

# Bonus Info

## **§192.473 External corrosion control: Interference currents**

192.473(c)-Onshore gas Transmission operator—you must have procedures to detect

Wind generators are causing CP issues and have heard some will pay to correct

# Shorted Casings---EVEN WORSE

Good Luck

Inspectors will be reviewing records



# §192.473 External corrosion control: Interference currents

(c) For onshore gas transmission pipelines, the program required by paragraph (a) of this section must include:

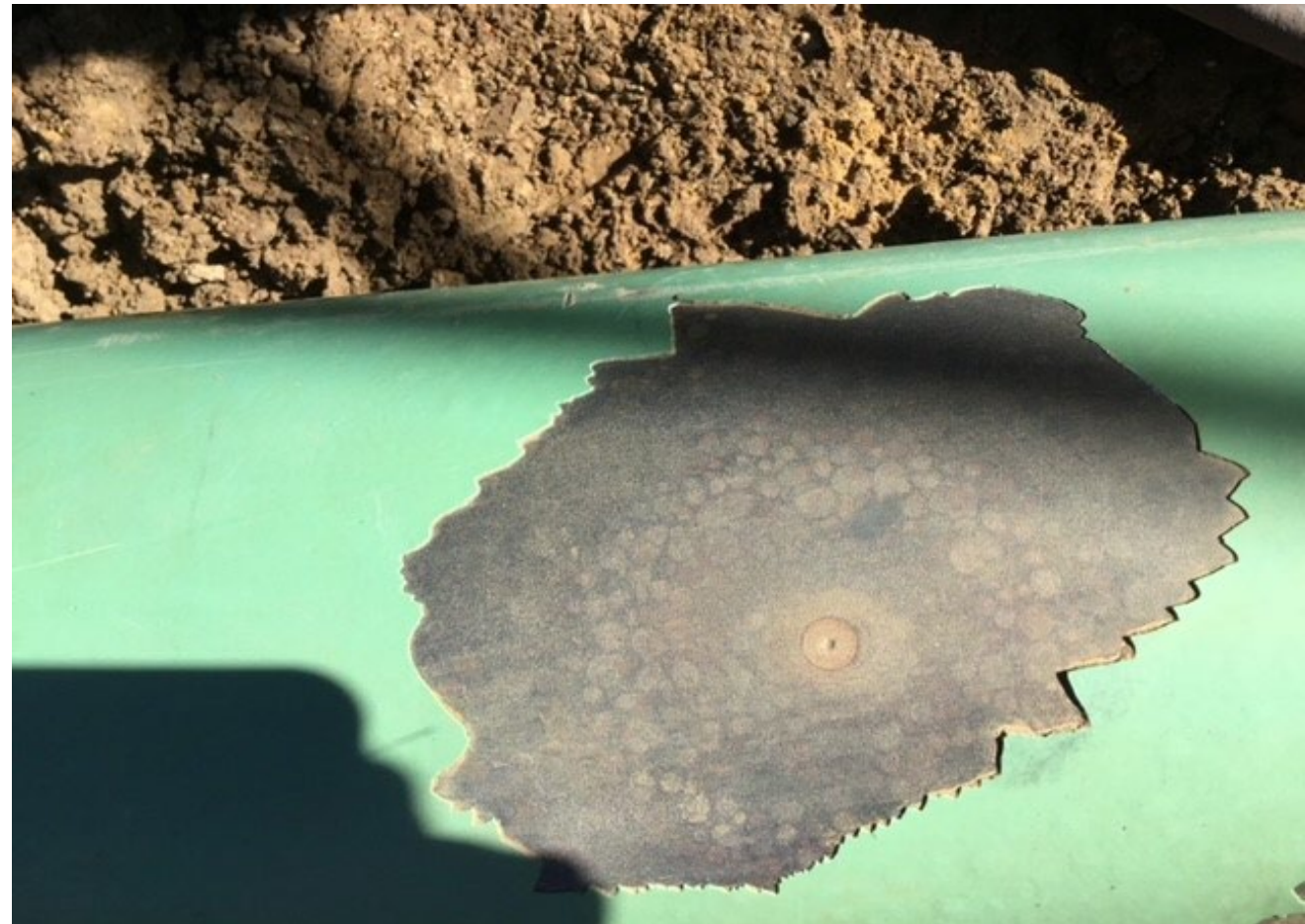
(1) Interference surveys for a pipeline system to detect the presence and level of any electrical stray current. Interference surveys must be conducted when potential monitoring indicates a significant increase in stray current, or when new potential stray current sources are introduced, such as through co-located pipelines, structures, or high voltage alternating current (HVAC) power lines, including from additional generation, a voltage up-rating, additional lines, new or enlarged power substations, or new pipelines or other structures;

(2) Analysis of the results of the survey to determine the cause of the interference and whether the level could cause significant corrosion, impede safe operation, or adversely affect the environment or public;

# **§192.473 External corrosion control: Interference currents**

- (c) For onshore gas transmission pipelines, the program required by paragraph (a) of this section must include:
  - (3) Development of a remedial action plan to correct any instances where interference current is greater than or equal to 100 amps per meter squared alternating current (AC), or if it impedes the safe operation of a pipeline, or if it may cause a condition that would adversely impact the environment or the public; and
  - (4) Application for any necessary permits within 6 months of completing the interference survey that identified the deficiency. An operator must complete remedial actions promptly, but no later than the earliest of the following: within 15 months after completing the interference survey that identified the deficiency; or as soon as practicable, but not to exceed 6 months, after obtaining any necessary permits.

# AC Interference



# BONUS INFO

192.453

How do you verify the CP Supervisor is qualified  
How do you determine if they maintain a thorough  
knowledge for those sections they are responsible  
for.



## Bonus info--

# Magnetism of pipeline after ILI run

When installing a pup---Do you degausse

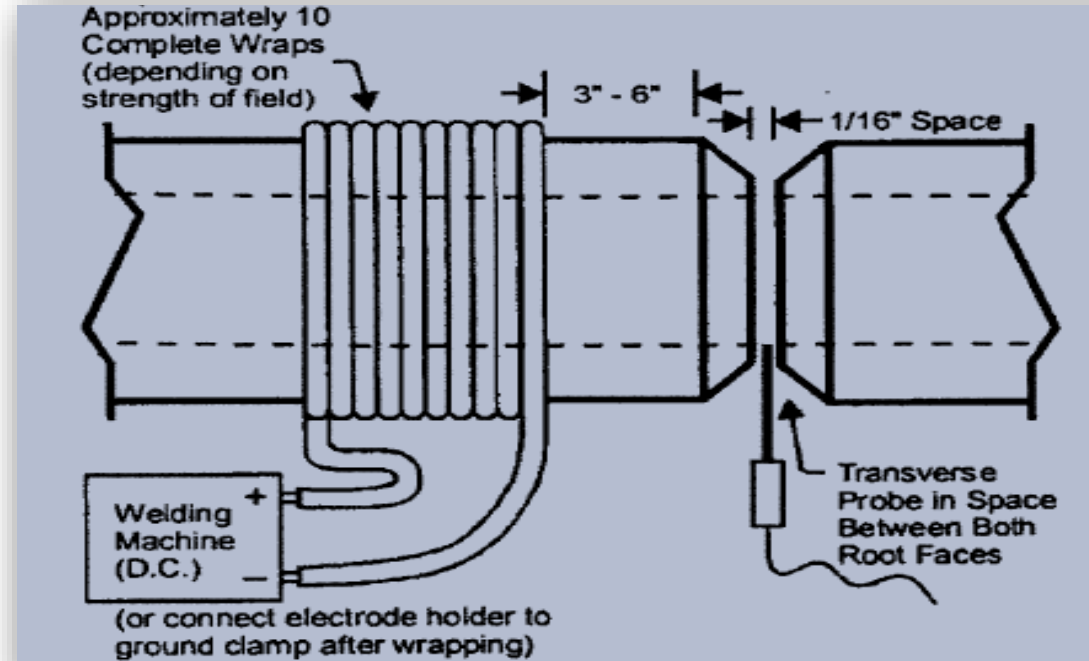
If not-it can lead to root bead cracking and xray might(not) pick it up

There have been incidents/accidents contributed to magnetism



# Sequence of Steps to Reduce or Temporarily Eliminate Magnetic Field on Pipe Ends

## Reducing or Temporarily Eliminating Magnetic Field



**NOTE:** On some projects, placing the coils one-half the diameter of the pipe from the joint to be welded reduced the field more than having the coil close to the joint.

# Bonus info-GAS Integrity Management

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DO you have procedures for performing in-situ examinations

Phased Array

Ultrasonic testing

Magnetic Particle



## §192.933 What actions must be taken to address integrity issues?

e) *In situ direct examination of crack defects.* Whenever an operator finds conditions that require the pipeline to be repaired, in accordance with this section, an operator must perform a direct examination of known locations of cracks or crack-like defects using technology that has been validated to detect tight cracks (equal to or less than 0.008 inches crack opening), such as inverse wave field extrapolation (IWEX), phased array ultrasonic testing (PAUT), ultrasonic testing (UT), or equivalent technology. "In situ" examination tools and procedures for crack assessments (length, depth, and volumetric) must have performance and evaluation standards, including pipe or weld surface cleanliness standards for the inspection, confirmed by subject matter experts qualified by knowledge, training, and experience in direct examination inspection for accuracy of the type of defects and pipe material being evaluated. The procedures must account for inaccuracies in evaluations and fracture mechanics models for failure pressure determination

Bonus info--






















# QUESTIONS