

CORROSION ASSESSMENT

ABC COMPANY 01-23-45-6 FLOWLINE

LICENSE # XYZ123-4

Report by
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Job # 13-123
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ABC Company 01-23-45-6 Flowline Corrosion Assessment

1 Introduction

On January 7th, 2013 a sample of four inch (114.3mm) diameter pipe was received from ABC Company. The sample originated from their Calgary field at location 01-23-45-6 gas flowline where a tie in was being made. The following report documents observations made on the as received and processed sample. It was split and cleaned so a thorough internal analysis could be performed.

Cormetrics Limited was retained to document and report on the sample condition and corrosion activity.

2 Sample Analysis

Company Name	ABC Company
Field Name	Calgary
License #	XYZ123-4
LSD	01-23-45-6W3
Pipeline Location	From 1-23 well to 1-23-45-6W3 Tie In
Line Size (mm)	114.3
Line Length (km)	1.08
Age of Line (years)	13
Pressure (kPa)	420
Temperature (°C)	10
Gas (e²m³/day)	5
Hydrocarbon (m³/day)	n/a wellsite separator for liquids removal
Water (m³/day)	n/a wellsite separator for liquids removal
Comments regarding system	No failure history; Pigged monthly, inhibitor batch quarterly Cathodic protection applied
Sample Length (cm)	156
External Coating	Yellow Jacket (YJ)
Internal Liner	n/a
Direction of Flow Labelled	Yes
Orientation Labelled	Yes

Table 1: Sample Information



Figure 1: Sample, as received

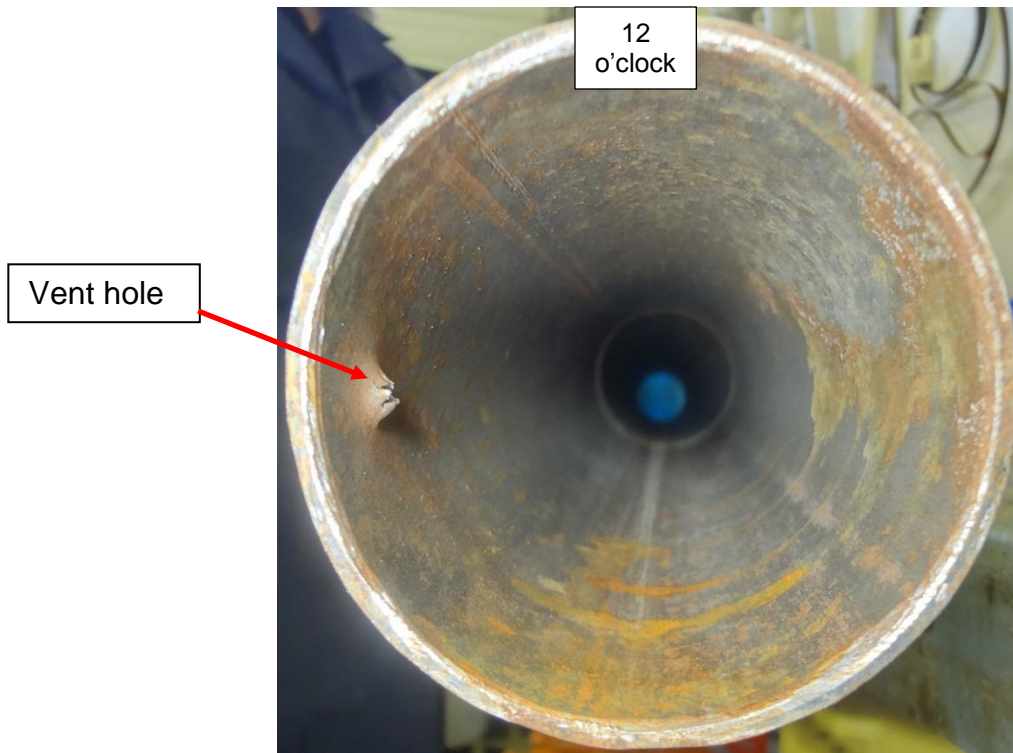


Figure 2: Internal Walls (Inlet), as received

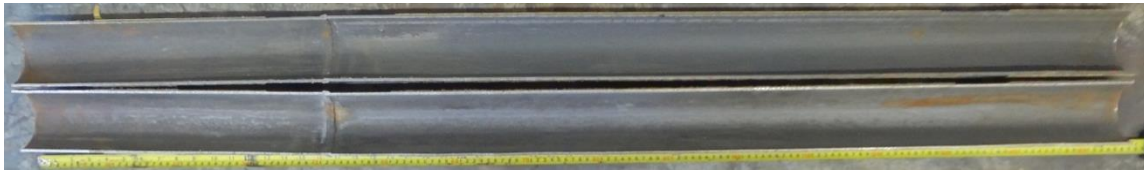


Figure 3: Internal Walls, following split, no significant deposition



Figure 4: Girth Weld Area (External)



Figure 5: Girth Weld Area (Internal)

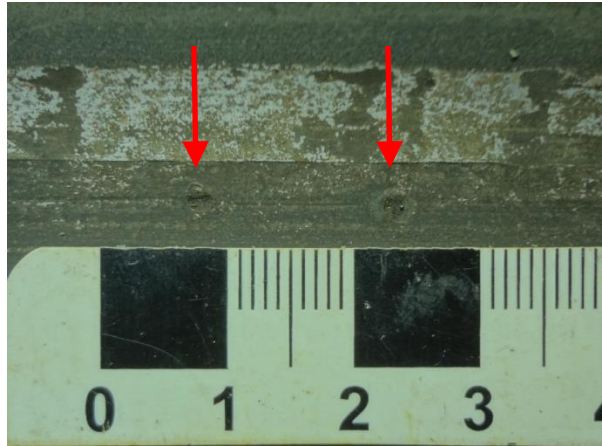


Figure 6: Pits located at 93 and 95.5cm from inlet (2 o'clock)

Observations when received	Sample encased in YJ coating and contained a girth weld. Coating was in fair condition
Internal Deposits	Dehydrated, thin tightly adherent black film, some bright orange oxide deposition; Mechanical vent hole @ 9:00, 1cm from inlet; Slightly more deposition in one end than other
Girth Weld Location	44 cm from inlet
Measured Wall Thickness (mm)	3.35 (specification 3.2mm)
ERW Orientation	10:30 US of GW, 2:30 DS of GW
Sulphide Spot Test Result	Negative

Table 2: General Comments

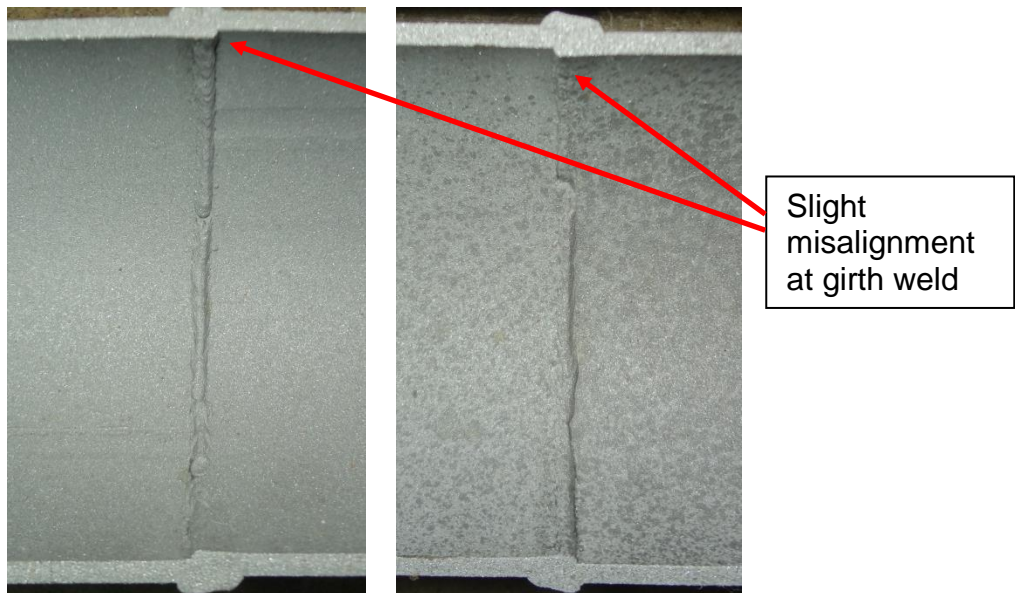


Figure 7: Girth Weld top and bottom slight misalignment

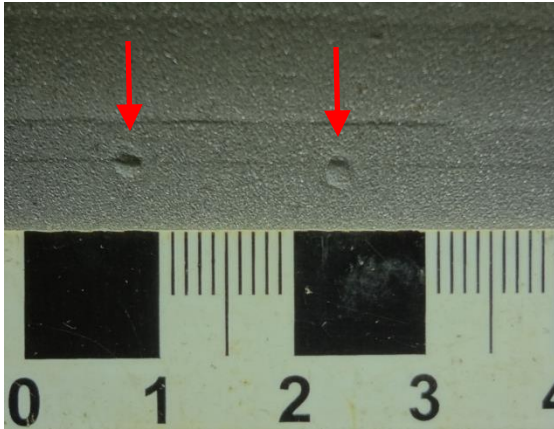


Figure 8: Pits-93& 95.5cm from inlet

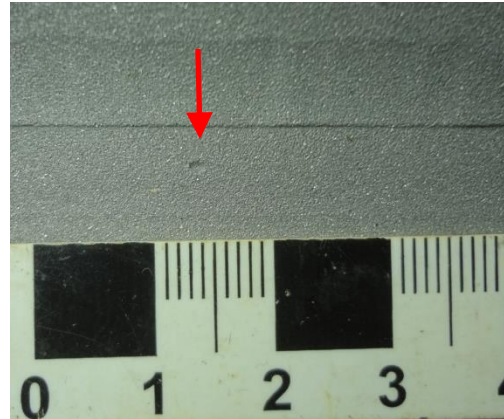


Figure 9: Pit-120cm from inlet

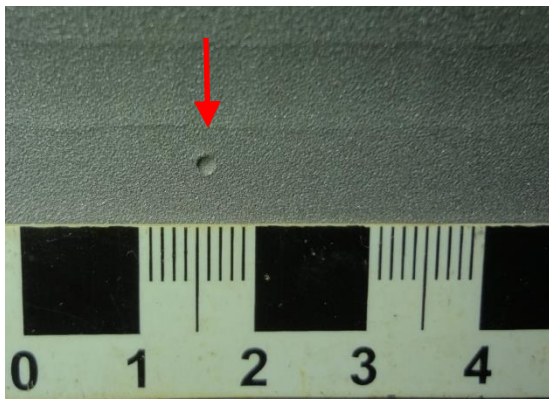


Figure 10: Pit-143cm from inlet

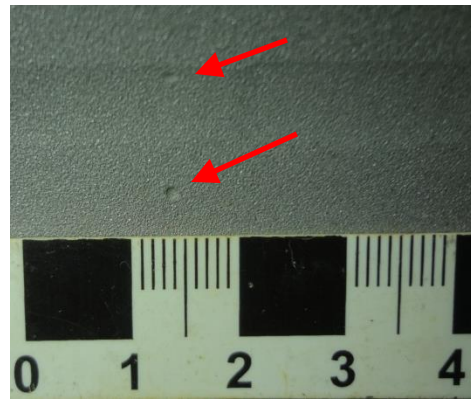


Figure 11: Pit-151cm from inlet

Internal pitting corrosion associated with ERW seam. Some defects appear to be mechanical in nature.

Defect(s)	Location	Orientation	Size (mm)		
			Length	Width	Depth
Isolated Pit	93 cm from inlet	2:00	2.0	2.0	< 0.5
Isolated Pit	95.5cm from inlet	2:00	2.0	2.0	< 0.5
Isolated Pit	120 cm from inlet	2:00	<1.0	<1.0	< 0.5
Isolated Pit	143 cm from inlet	2:00	2.0	2.0	< 0.5
Isolated Pit	151 cm from inlet	2:00	<1.0	<1.0	< 0.5

Table 3: Defect Assessment

3 Concluding Remarks

The pipe cut out was in good condition from an integrity standpoint. All defects were to less than 0.5 mm depth wall loss. The internal pits were associated with the ERW seam at the 2:00 o'clock orientation. A slight misalignment of the pipe segments was noted at the girth weld that would not impact pipeline integrity. The sample as received had minimal internal deposition indicating an effective pigging and batch corrosion inhibitor treatment program.