

8. APPENDIX 1

GLOSSARY OF TERMS

The below terms and definitions are used during the analysis of inspection data and in the methodology for pipeline wall damage severity determination based on magnetic, ultrasonic and geometry inspection tool data.

General terms

ILI tool

An in-line inspection tool is a device that is propelled through a pipeline by pumping medium. The tool is equipped with recording instrumentation to allow it to create data logs, which can be used to locate and classify features.

Pipeline feature

Any indication recorded during the course of the in-line inspection (features, construction elements etc.) based on NDT techniques.

Verification digs

Excavations performed to verify the location and severity of pipeline features.

Anomalies

Dent

Local reduction of the pipeline internal diameter due to mechanical impact by a solid object on the pipeline surface.

Girth weld anomaly

A change of the physical characteristics of the metal, recorded by an MFL tool in or around a girth weld. These may include such features as porosity, slag inclusion, shrinkage cavity, undercut, protrusion and misalignment of edges.

Girth weld anomaly

(flat-type discontinuity)

A flat-type anomaly such as a crack, a lack of penetration, faulty fusion, apparent metal rupture or fatigue along a girth weld. Includes features with both mechanical and corrosion-based origins.

Inclusion

A pipe wall anomaly characterized by a metal continuity abnormality in the form of extraneous mid-wall material.

Intermittent lamination

Several individual laminations in a pipe body alternated with solid wall areas.

Lamination	A discontinuity of the pipe wall metal.
Lamination connecting to surface	A sloping lamination that connects to a pipe surface.
Lamination in a weld area	A lamination adjacent to a weld. There is extra danger of a potential crack in a weld caused by the effect of the lamination when making the weld.
Metal loss	An anomaly associated with a reduction of the pipe wall thickness, whether caused by corrosion or mechanical means.
Mill fault	A metal loss anomaly that appears to be due to a manufacturing anomaly rather than corrosion (e.g. repeating features of a similar shape and size).
Misalignment	An anomaly originated from the assembly operations, when the centrelines of two connecting pipes (for girth welds) or two connecting sheets (for longitudinal or spiral welds) do not coincide.
Notch (scratch)	Pipe wall metal loss due to mechanical damage.
Pipe material anomaly	A feature exhibiting local changes in the magnetic properties of the material (e.g. caused by mid-wall features or non-magnetic inclusions). Due to the attributes of these features they cannot be interpreted as metal loss with certainty.
Restriction	Reduction of the internal diameter caused by: <ul style="list-style-type: none">• mechanical impact by a solid object on the pipeline surface (a dent).• buckling strain of a pipe (a wrinkle)• parts of construction elements.• ovality of a pipe.
Ripple	Local reduction of the pipeline internal diameter due to a circumferential wrinkle on a pipe caused by buckling strain.

Seam weld anomaly A feature associated with local changes in the magnetic properties of a seam weld (e.g. caused by presence of slag and other non-magnetic inclusions, a lack of penetration etc.).

Wall thickness change A deliberate change in the internal diameter formed during pipe manufacturing or by metal sheet rolling.

Construction elements

Attachment An element welded to the external pipeline surface.

Bend A manufactured (hot) bend in the pipeline.

Casing An external protective pipeline shell installed on isolation seals.

Eccentric casing A part of the casing that does not sit concentric to the pipeline due to deformation or misalignment.

Field bend A pipeline bend that is formed in the field.

Field-made T-piece A pipeline construction element (pipe fitting) manufactured in the field.

Full circle fitting An external construction element with a relatively short length installed around the pipe.

Mitre bend A bend of the pipeline manufactured from one or more obliquely welded bends.

Oblique weld seam An angled weld seam that can be used on adjacent spool pieces to form a shallow bend.

Pipe installation A construction element welded to the pipe with a through hole in the pipe wall (branch pipe, weldolet, offtake etc.).

Support A pipeline metallic element used as a base for pipe mounting.

Swamp weight	An external metallic pipeline component (weighting material) installed in the upper part of a pipe to prevent the pipeline from floating in bodies of water.
T-piece	A pipeline construction element (pipe fitting) used for separating the pumping product, with a diameter more than half of the pipeline diameter.
Valve	A pipeline construction element that can be operated to block or permit the flow of pipeline product.
Weldolet offtake	A fitting specified by the customer in the list of weldolets and valves as a weldolet off-take.
<u>Repair structures</u>	
Patch	A piece of additional material that has been attached to the pipe in order to cover or reinforce an anomaly.
Repair sleeve	A shell that fits snugly around the pipeline circumference in order to cover or reinforce an anomaly.
<u>Other features</u>	
Backing ring	A pipeline component in the form of a thin and narrow metal strip around the pipe, located under a girth weld on the internal surface of the pipeline.
Deposit	A deposit of wax or product debris on the inside of the pipeline. Deposits can potentially impede pipeline inspection.
Extraneous body	An object inside the pipeline.
Metal object	A metallic object, located against or near the external surface of the pipeline.
Overlap	Welding material lapping over a weld.

Feature specifications

Absolute distance	A distance from the pipeline start point (normally KP 0.0) up to the nearest edge of a feature / anomaly.
Feature depth	The maximum depth measured at a feature / anomaly.
Feature length	The measured size of a feature / anomaly in relation to the longitudinal axis of the pipe.
Feature type	Defines a feature as internal or external.
Feature width	The measured size of a feature / anomaly in relation to the circumference of the pipe.
Orientation	The location of the centre of a feature / anomaly in terms of its o'clock position. Orientation is determined clockwise and viewed in the direction of flow.
Pipe spool number	The number of the girth weld at the start of a pipe spool.
Relative distance	The distance from the feature / anomaly's start point to the nearest upstream girth weld.

Strength calculations and pre-repair classification of features

Allowable operating pressure	A calculable pressure that defines the maximum pressure allowable for a pipeline section containing features in order for it to provide standard reliability for the pipeline operation. It is determined with strength calculations taking into account the section category and safety factor.
Design pressure	The maximum operating pressure for which the pipeline is designed.

Severe anomaly

An anomaly defined as severe on the basis of strength calculations. At such an anomaly the pipe strength will be lower than normal to the extent that the allowable operating pressure is less than pipeline design pressure. It is possible that hydraulic testing of the line at its designed test pressure could cause it to fail.

Other terms**adj. gw / agw**

Feature adjacent to a girth weld.

adj. lw / alw

Feature adjacent to a longitudinal weld.

adj. sw / asw

Feature adjacent to a spiral weld.

Echo loss

It is impossible to determine a wall thickness for the given section. When a metal loss feature coincides with echo loss its actual depth may be higher than the value that is measured.

Inspection sheet

A document that gives a detailed description of a feature, along with its position in relation to above-ground references.

Inspection sheet feature

A feature reported in an inspection sheet.

Inspection sheet number

The numbers on inspection sheets will match the numbers of the appropriate features as reported in the pipeline features list.

Possible / poss. ...

Used in case when it is not possible to classify an anomaly due to data loss (e.g. because it has a complex shape or due to insufficient pipe cleaning).

Section with ...

An area containing a substantial number of the stated feature.