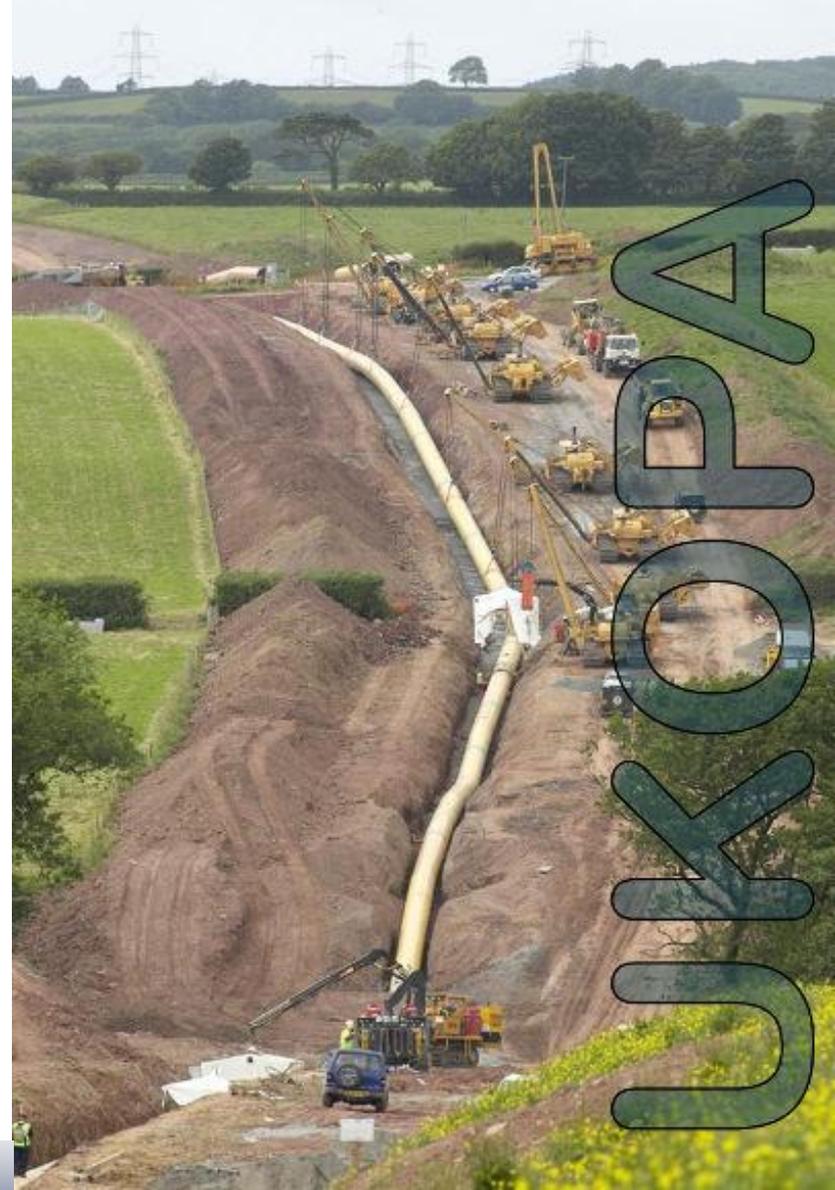# UKOPA
United Kingdom Onshore Pipeline Operators' Association

Introduction to Universal POF Template (UPT) and POF 110
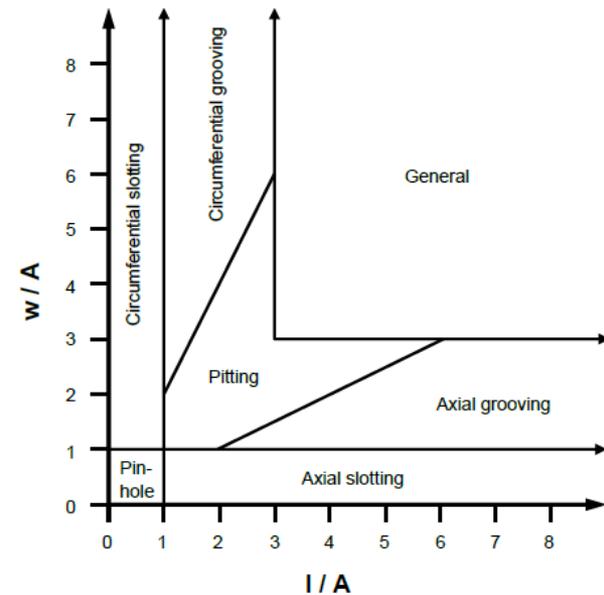
Richard Espiner

Overview

○ What is POF?

○ What is the POF 110 Specification?

○ How is it intended to work?

○ What was the POF committee's thinking behind it – what did they want to achieve?

○ Is this being used by UKOPA companies?

○ Should UKOPA companies be using it?

Pipeline Operators Forum (POF)

o A non-profit forum enabling pipeline inspection and integrity engineers to share and build good practices, with the ultimate purpose of improving the quality of pipeline integrity management at every level, hence protecting people, the environment and operational integrity of pipelines globally

o The POF restructured in 2014 from an informal organization into a formal association registered in The Netherlands

Pipeline Operators Forum (POF)

o Historical focus on ILI – development of "Specifications and requirements for in-line inspection of pipelines" (now POF 100)

o POF documentation strongly influences 2 UKOPA GPGs related to ILI

Pipeline Operators Forum (POF)

o POF currently has 32 member companies globally

- o Members include international oil & gas majors, European TSOs and operators of single (long) pipelines

- o 4 are also members of UKOPA: ExxonMobil, Shell, RRP, Cadent (National Gas has also applied to join POF)

o This document specifies a universal data format (UPT, i.e. Universal POF Template) to report <u>processed</u> data from an in-line inspection run. It is intended as an addition to POF 100

  o Intended to ease multiple runs comparison, especially when performed by different ILI contractors

In short …

- A means of representing non-UT ILI data (MFL, EMAT, geometry) in a way directly comparable with a UT C-scan
  - MFL → calculated metal loss
  - Geometry → deviation from cylindrical profile
- Defined 5 mm x 5 mm grid
  - Finer resolution can be specified if technology is capable (to allow future improvement)

Origins of UPT

o French pipeline industry JIP on pipeline integrity, formed in response to increased regulatory scrutiny following a pipeline failure

o Objective to develop a software tool to enable comparison of ILI data from different ILI suppliers

o Included development of an intermediate data format in collaboration with ILI suppliers

o Several JIP members are also members of POF – used POF as a vehicle for publication of the agreed data format

Development

o Initially specified "raw data"

o Pushback from ILI contractors

  o Commercial

  o Technical wrt MFL signals

o Moved from reporting of magnetic field strength to a grid of metal loss depth

  o Similar to TC Energy Psqr approach for complex corrosion assessment

  o Analogous to a UT C-scan

UPT file format

o POF 110 specifies the required file format
  - Required data file format is HDF5 (Hierarchical Data Format), a versatile and free to use opensource file format supported by the HDF Group
    - https://www.hdf-group.org
  - The overall data for one run will consist of one header file and several UPT data files, all in HDF5 format. The header file will contain all general data relative to the run and the pipe tally of the run. The UPT data files will contain the recorded data of the run
  - One HDF5 UPT data file is produced for every defined segment consisting of a fixed number of odometer ticks, that number being at least ten thousand (10 000) and being specified in the header file

Current POF requirements

o 2016 edition of POF specification required a "raw data" or "processed raw data" report on request – with format subject to agreement

o Current POF 100 (2021)

  o Requires run data in UPT format on request

  o Recommends requesting this for any inspection, even if a run comparison is not specifically required, in order to be able to do it against a future run

Practical implementation

o French JIP developed a software tool (ILICOMP) to display the UPT data files

o Intended for quality control and checking of contractor's run comparison results

o JIP members in discussion with POF about making ILICOMP available to industry

o Majority of POF member companies unable to install the software for evaluation

o Other pipeline software companies expressed interest in adopting the tool or incorporating the file format into their existing software

o Direction currently uncertain

Uptake

o Several French operators are requesting UPT following their ILI runs

o At least two ILI contractors have provided the requested data

o No known use outside France to date

Summary

o The Universal POF Template is defined in POF 110

o Delivery of UPT data is a recommended option in POF 100

o Enables comparison of multiple ILI runs independent of contractor or technology

- o Contractor A MFL vs Contractor B MFL
- o Contractor C MFL vs Contractor C UT

o Commercial software exists

o Limited track record to date

Thank you for your attention!

○ Questions?