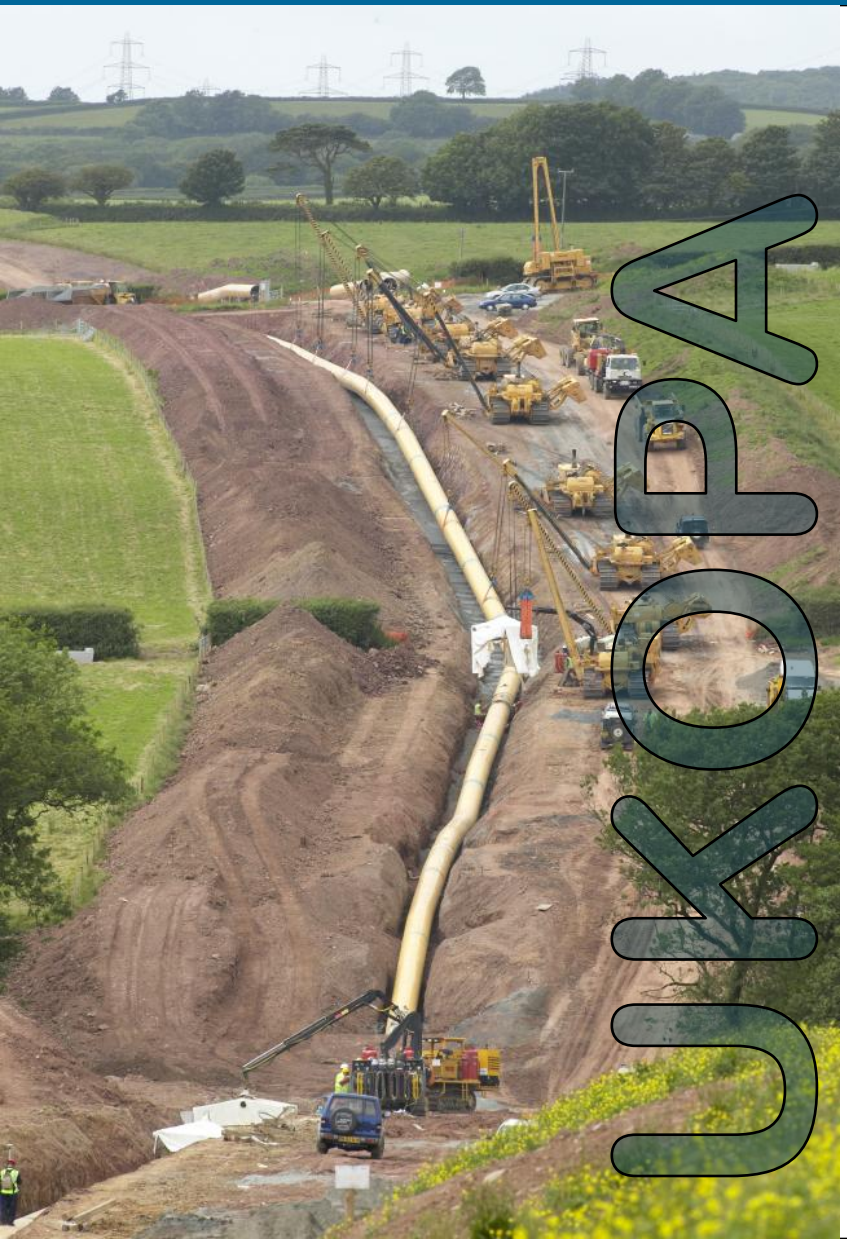

Fault and Risk Working Group (FARWG) Update

Simon Joyce – FARWG Chair

Asset Engineer (HP Gas Pipelines)

SGN

FARWG – Current Membership

1.	Simon Joyce	SGN (Chair)
2.	Nikki Barker	PIE (Secretary)
3.	Kristina Brazenaite	Northern Gas Networks
4.	Graham Canty	Gas Networks Ireland
5.	Neil Clarke	Valero
6.	Darren Cushen	Wales & West Utilities
7.	Dave Brown	Essar
8.	Alex Green	Cadent
9.	Stephen Humphrey	CLH-PS
10.	Fridolin Jenny	Swissgas
11.	Arnaldo Latas	Ineos FPS
12.	Graham Pailor	Sabic
13.	Steve Potts	National Grid
14.	Richard Price	BPA
15.	Nick Procter	Wood Group PSN
16.	*Mike Acton*	*DNV-GL*
17.	*Graham Goodfellow*	*PIE (former Chair)*
18.	*Rod McConnell*	*Independent consultant*

2017 Summary

- 2017 Meetings:
  - Ambergate (National Grid) – 5th April
  - Kingsbury (BPA) – 12th September
  - Stanlow (Essar) – 6th December

- Key activities in 2017:
  - Leak & Fault Database 2016 report
  - Ongoing discussions with HSE LUP regarding thick wall pipe failure frequency issues
  - Development of GPGs & TBNs of historic work

2018 Work Programme

- Base Load
  - Collect fault data & issue Product Loss & Fault Report (1962-2017)
    - Operator data transfer issues – solved?
    - Inconsistent data entries – ongoing
  - Continued development of Liquid Hydrocarbon Database

- Key Priorities – Carried forward from 2017
  - Create 10 TBN/GPGs covering historic work from RAWG
  - Update Fault Distributions (>5 years since last update)
  - Update 3rd Party Failure Frequency Model Recommendations
  - Review Fault Data & Report requirements
  - HSE LUP thick-walled pipeline frequency
    - Reinstate LUP Case Database

Good Practice Guides

Good Practice Guides		Complete	Progress
1	Application of Cost Benefit Analysis to demonstrate ALARP	90%	1st Draft issued for comment Aug 17 DNV GL producing 2nd Draft?
2	Capturing & Monitoring Population Density	50%	Initial draft complete Input requested from RSK Orbital to illustrate
3	Managing Societal Risk in the vicinity of Gas Pipelines	90%	NG draft document by Steve Potts updated by Neil Jackson Format to be updated to latest GPG

Target completion – end of Q1 2018

TBNs of Historic Work

Technical Briefing Note		Complete	Progress
4	Collecting & Reporting Fault Data (incl.FR1 form)	25%	Based on presentation to Data Collection workshop (April 2016)
5	LUP Zones for Gasoline Pipelines	50%	1st draft complete
6	Effect of Pipeline Surveillance on Risk	0%	To document surveillance chart in IGEM/TD/2
7	History of Land Use Planning (incl. Event Tree & Ethylene Frequency)	10%	Last issued as UKOPA document in 2005 – major revision to bring up to date
8	Oil Pipelines Drain Down Study	90%	1st draft issued Q1 2016 Format to be updated and comments included
9	Managing Encroachment & Societal Risk for Oil Pipelines	0%	May combine with 5
10	Managing Societal Risk in the vicinity of Ethylene Pipelines	90%	Reissued for comments to FARWG Format to be updated

Target completion – end of Q1 2018

Update Failure Distributions

- 2016 data available
- More distributions required
  - ISRU review for COOLTRANS identified 5 separate distributions
    - Gouge Length
    - Gouge Depth
    - Gouge in Dent Length
    - Gouge in Dent Depth
    - Denting Force
  - Lognormal and Weibull distributions
- Data passed to Susannah Turner (Highgrade Associates)
  - Produced last data fits in 2010 when at Penspen
- Updated distributions to be included in IPC 2018 paper and next Product Loss Report

Update 3rd Party Failure Frequency Model

- 3 sources of models
  - AFFECT model from COOLTRANS
    - Provided by NG
  - PDAM2 Report
    - (Informal) agreement reached with Penspen for supply of a copy (for this project only)
  - New EPRG model
    - Some queries over fit of test data so publication delated until at least end Q1 2018
    - Dr. Andrew Cosham currently reviewing model for EPRG
      - Initial (informal) feedback is that model may be slightly more accurate but less useful for failure frequency prediction as it requires generally unavailable data
- Objectives
  - Produce report recommending approach
  - Update spreadsheet prediction tool and check standard set of cases for impact
  - Investigate web-based tool for failure frequency prediction by members

Review Fault Data & Report Requirements

- Occasional requests from members and public for more data to be presented
  - Review UKOPA report versus EGIG
    - UKOPA = 33 pages
    - EGIG = 61 pages
  - Any other suggestions welcome
  - Recommendations for 2017 report

- Creation of fault data report requires leaks and defects to be correctly categorised
  - Each year manual process to deal with data that is inconsistent or blank in key cell
- Propose review of leak data to ensure details correct
  - May include follow up with operator, review of original FR/1 form, etc. where data cannot logically corrected

Failure Frequency for thick-walled pipe in LUP

- HSE apply a fixed rupture rate for Ground Movement / Other category to all pipelines when calculating LUP zones
  - "Update of pipeline failure rates for land use planning assessments" HSL Report MSU/2012/38, 06/12/12
    - Based on single perimeter crack failure of a forged end seal at Palaceknowe in 1993

- Ground movement / Other is almost 99% of rupture rate for thick-walled pipe
  - Can lead to significant LUP zones
  - Can't be mitigated by thick-wall or slabbing (or even pressure reduction)

‘Progress’ on Discussions with HSE

- UKOPA position paper (UKOPA/16/007) issued to HSE on 20th June 2016
  - 6 key points of disagreement with HSE/HSL analysis
- Response from HSE on 13th June 2017
  - HSE believes current failure rates are fit for purpose for LUP
    - Other category covers future unknown failure issues
    - Effect of Palaceknowe will reduce as operational exposure from 1993 (without failure) increases
- Response to HSE Response issued on 26th October 2017
  - Request to work with HSE to achieve satisfactory outcome for all
  - Appendix of detailed comments/clarifications
- Positive discussion with Julie Voce & Alan Meyer at Annual UKOPA/HSE Liaison Meeting in Kegworth on 1st November 2017
  - Request from HSE to gather operator data on:
    - LUP cases that had caused operator difficulty
    - LUP cases where PADHI/Web tool has not been correctly applied or applied inconsistently
  - NB data similar to part of requirements of original LUP case database

2018 Meeting Schedule

- 21st March – SGN, Yarnton, Oxfordshire
- 11th September – DNV GL, Loughborough
- 4th December – NG, Ambergate