



Fault and Risk Working Group (FARWG) Update

Simon Joyce – FARWG Chair

Asset Engineer (HP Gas Pipelines)

SGN

&

Graham Goodfellow

PIE

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. John Ferrari | Essar |
| 8. Alex Green | Cadent |
| 9. Stephen Humphrey | CLH-PS |
| 10. Fridolin Jenny | Swissgas |
| 11. Arnaldo Latas | BP |
| 12. Graham Pailor | Sabir |
| 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 to date

☐ 2017 Meetings:

- ☐ Ambergate, 5th April
- ☐ Kingsbury, 12th September
- ☐ *Stanlow, 6th December*

☐ Key activities in 2017:

- ☐ Leak & Fault Database 2016 update
- ☐ Update Fault Distributions & 3rd Party Failure Model
- ☐ Ongoing issue with HSE LUP thick wall pipe failure frequency

2017 Work Programme

Base Load

- Collect fault data & issue Product Loss & Fault Report (1962-2016)
 - Operator data transfer issues
- Continued development of Liquid Hydrocarbon Database

Key Priorities

- 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 (user comments)
- Reinstate LUP Case Database

GPG/TBNs of Historic Work

Good Practice Guides

- 1 Application of Cost Benefit Analysis to demonstrate ALARP
- 2 Capturing & Monitoring Population Density
- 3 Managing Societal Risk in the vicinity of Gas Pipelines

Technical Briefing Notes

- 4 Collecting & Reporting Fault Data (including FR1 form)
- 5 Effect of Pipeline Surveillance on Risk
- 6 Land Use Planning Zones for Gasoline Pipelines
- 7 History of Land Use Planning (including Event Tree & Ethylene Frequency)
- 8 Oil Pipelines Drain Down Study
- 9 Managing Encroachment & Societal Risk for Oil Pipelines
- 10 Managing Societal Risk in the vicinity of Ethylene Pipelines

Update Failure Distributions

- 2015 data available
- More distributions required
 - ISRU review identified 5 separate distributions
 - Gouge Length
 - Gouge Depth
 - Gouge in Dent Length
 - Gouge in Dent Depth
 - Denting Force
 - Lognormal and Weibull distributions
- Delivery by 30th November
 - Publish in Product Loss & Fault 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 delayed until at least end Q1 2018
 - ❑ Discussions ongoing over MoU

- ❑ 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

Review Report Requirements

- Occasional requests 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

Failure Frequency for thick-walled pipe

- ❑ 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 almost 99% of rupture rate for thick-walled pipe
 - ❑ Can lead to significant LUP zones
 - ❑ Can't be mitigated by thick-wall or slabbing



'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 Palacknowe will reduce as operational exposure from 1993 (without failure) increases

- ❑ Response to HSE Response drafted by FARWG
 - ❑ Request to work with HSE to achieve satisfactory outcome for all
 - ❑ Appendix of detailed comments/clarifications



UKOPA MAHP Database Update

October 2017

2016 Product Loss & Fault Data

- ❑ 82 faults recorded in 2016
 - ❑ Awaiting response from 4 operators (approx. 13% of total length)
- ❑ 1 product loss incident
 - ❑ Other – non welded joint
- ❑ Pipeline population data updates are in progress

- ❑ Data received from
 - ❑ NG, Cadent, NGN, WWU, SGN (Southern), Ineos, Shell, BPA
- ❑ Final reminders for 2016 data have been issued to
 - ❑ Essar, Sabic, BP, SGN (Scotland)

- ❑ UKOPA Pipeline Fault Database Report will be prepared for FARWG approval by 30th November 2017

MAHP Database – 2016 Fault Data

Fault	2016	2015	2014
Ext corrosion	52	49	33
Ext interference	5	9	7
Girth weld defect	0	2	2
Original construction	1	12	12
Material (pipe defect)	6	5	5
Dents	0	21	11
Ground movement	0	1	1
Other/unknown	10	14	11
No fault	8	4	2
Total	82	117	102

2016 Discovery Method	No.	%
ILI	60	74.1
CIPS/Pearson/DCVG	15	18.3
Ground Patrol	2	2.5
Air Patrol	1	1.2
Public	1	1.2
Site Contractor	1	1.2
Other/Unknown	2	2.5
Total	82	100

UKOPA Database (1962 – 2016)

Cause	Faults	Product Loss
External Corrosion	1313	42
Internal Corrosion	29	2
External Interference	720	43
Original Construction Damage	302	0
Material defect (pipe, mill damage, seam weld)	440	16
Girth weld defect	217	36
Ground movement	40	7
No fault	47	n/a
Other/unknown	606	51
TOTAL	3788	197

MAHP Database Developments

- ❑ Operator pipeline data is becoming more complex and difficult to check and update
 - ❑ Currently supplied in Excel format as output from GIS / SAP systems
 - ❑ Trial of transfer to Access for processing

- ❑ Access queries used to extract the data required for the Product loss & fault report calculations
 - ❑ Extracted data returned to Excel database

- ❑ Will allow operators to supply their current data in in-house Excel format

Other databases

- Liquid hydrocarbon database
 - Some data received (BPA)

- LUP database
 - Location and development details
 - Local pipeline details and LUP inner, middle and outer zones
 - Advice provided by the HSL LUP Pre-planning advice service
 - Additional QRA details
 - Further advice from HSE
 - Request for details of recent planning enquiries to be issued

- PIWG Weld Quality Database
 - Details of weld quality from inspections to be added to UKOPA database