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UKOPA Technical Seminar – May 2012

Pipeline Inspection and Repair Case History

Integrity Management – Current Issues

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Integrity Management – Current Issues

- BPA Introduction
- BPA IM System
- Recent findings – 2 case studies
- Conclusions

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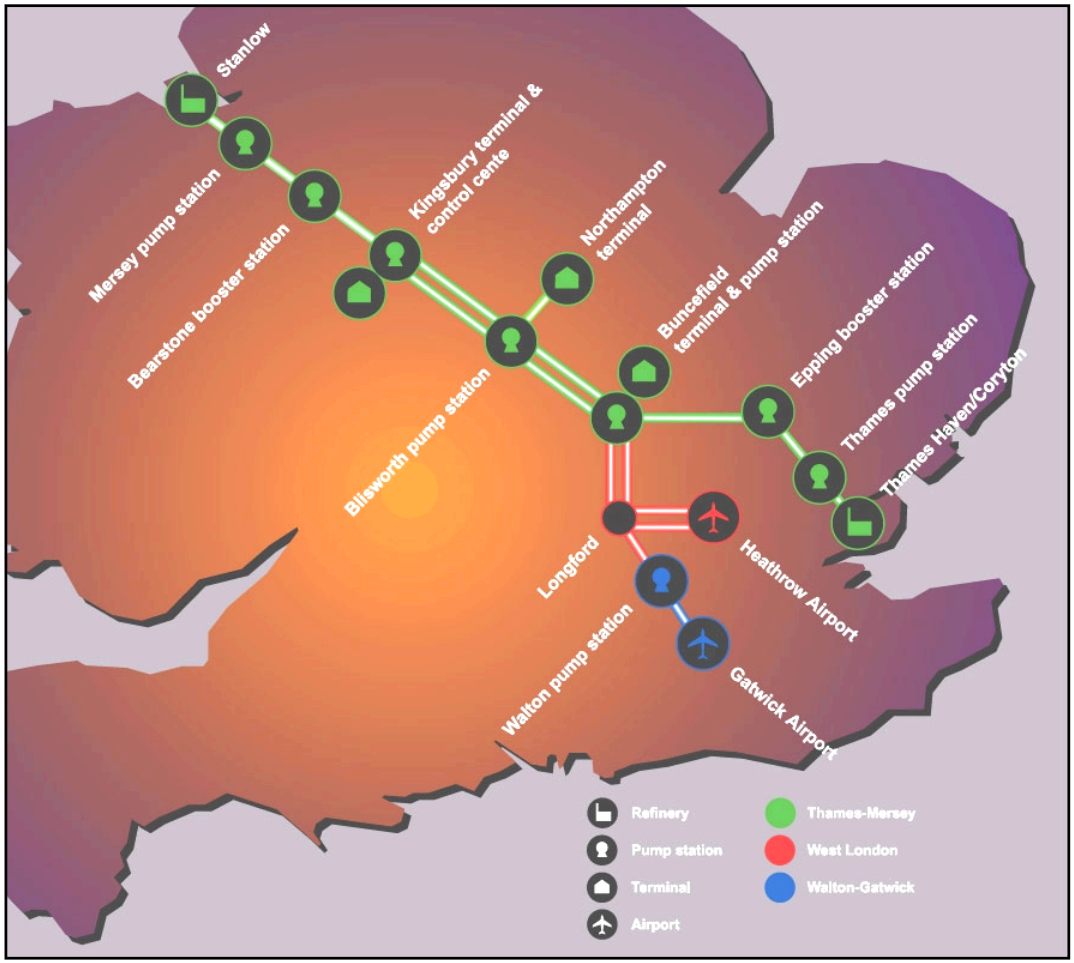
bpa

BPA – who are we??



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BPA IM System

- Accountability
- Competence
- Hazard Evaluation / Risk Management
- Facilities and Process Integrity
- Protective Systems
- Practices and Procedures
- Management of Change
- Emergency Response
- Incident Investigation and Learning
- Performance Management and Learning

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BPA IM System – Pipeline Integrity

- Robust ILI process
  - All transmission lines inspected on an agreed programme
  - Potential defects repaired or removed – MoC log
  - Fitness for Purpose analysis completed
- Robust CP process
  - CIPS/DCVG surveys completed
- Management of Third Party Risks by Landowner communications
  - Collaborative programmes – Linesearch / Linewatch
  - Field surveys and regular liaison discussions
  - Contravention management and supervision

Pipeline Integrity – Case study 1

- UKOP 14” Thames Mersey Multiproduct Pipeline
- Built late 1960s (ca 45years old)
- API 5L Grade X42 – ANSI Class 600 (ca 90barg operating)
- Transports refined fuel – Gasolines / kerosines / diesels
- First ILI – 1992. Then 1997, 2002 and Q1 2011

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Pipeline Integrity – Case study 1

- 2011 ILI survey – Baker Hughes MFL with Inertial Navigation system
- FFP looked at results, previous 2002 (Tuboscope/NDT) run and CIPS/ DCVG survey in 2004

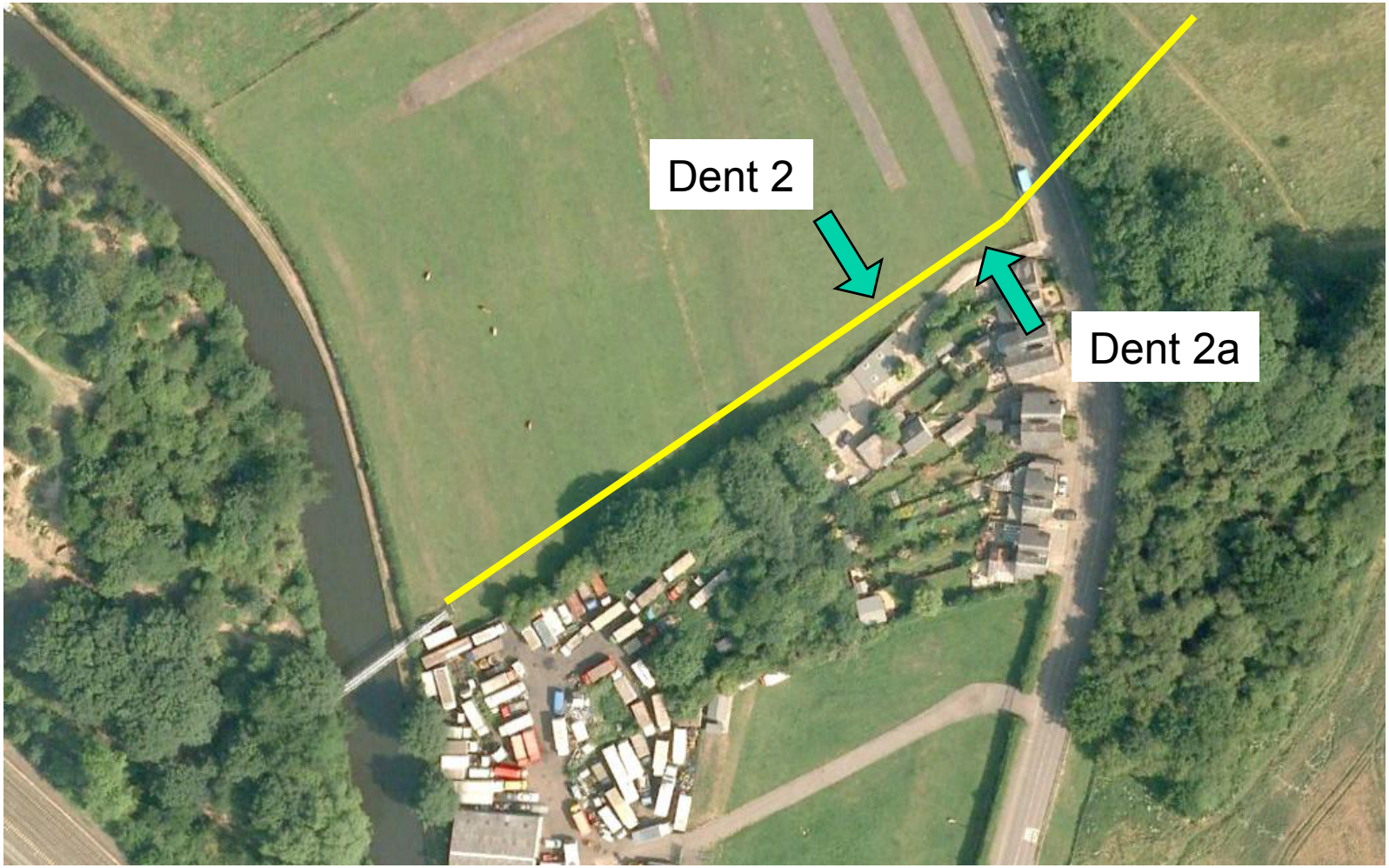
- Findings – 10 dents over 3% ID and 295 metal loss greater than 10% wt where previous report had 6 dents and 235 metal loss indications

- Review of reports indicated change due to differences in report analysis (15%WT compared to more accurate 10%WT now) and so 2011 ILI found all the 2002 features and found “new” minor ones

Pipeline Integrity – Case study 1

- 2 investigations of note:
- Dent One 1.8% dent/metal loss/shorted casing – sleeve had crushed spacer and pipe resting on casing - wrap repair. (Previously reported in 2004 as not a dent but a touching casing)
- Dent Two is 6% dent with associated metal loss – cut out repair completed in March 2012) (Previously reported in 2004 as exaggerated reaction of sensors to girth weld and no metal loss)
- Dent Two was adjacent to another Dent (2a) investigated and removed at same time
- Dent Two believed to have been there from construction – 45 years!!!

Pipeline Integrity – Case study 1



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Pipeline Integrity – Case study 1


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Pipeline Integrity – Case study 1

Pipeline Integrity – Case study 2

- UKOP 12” Thames Mersey Multiproduct Pipeline
- Built late 1960s (ca 45years old)
- API 5L Grade X42 – ANSI Class 600 (ca 90barg operating)
- Transports refined fuel – Gasolines / kerosines / diesels
- First ILI – 1994. Then 2000 and 2010/11

Pipeline Integrity – Case study 2

- 2011 ILI survey – PII (now GE) MFL with Inertial Navigation system
- FFP looked at results, previous 2000 (Rosen) run and CIPS/DCVG survey
- Findings – 77 dents and 48908 metal loss reports
- 60 significant features – 35 internal corrosion and 25 external corrosion where wall loss >30%
- All dents less than 3% ID
- Only one feature picked up in the 2000 survey

Pipeline Integrity – Case study 2

- Analysis of results:
  - No significant external corrosion evident
  - No growth of internal defects
  - 6 dents may have associated metal loss
  - 11 corrosion features need investigation/repair
  - Very significant areas of general internal corrosion clusters (8m to 600m in length!) previously unreported because of tool accuracy – there for 45years

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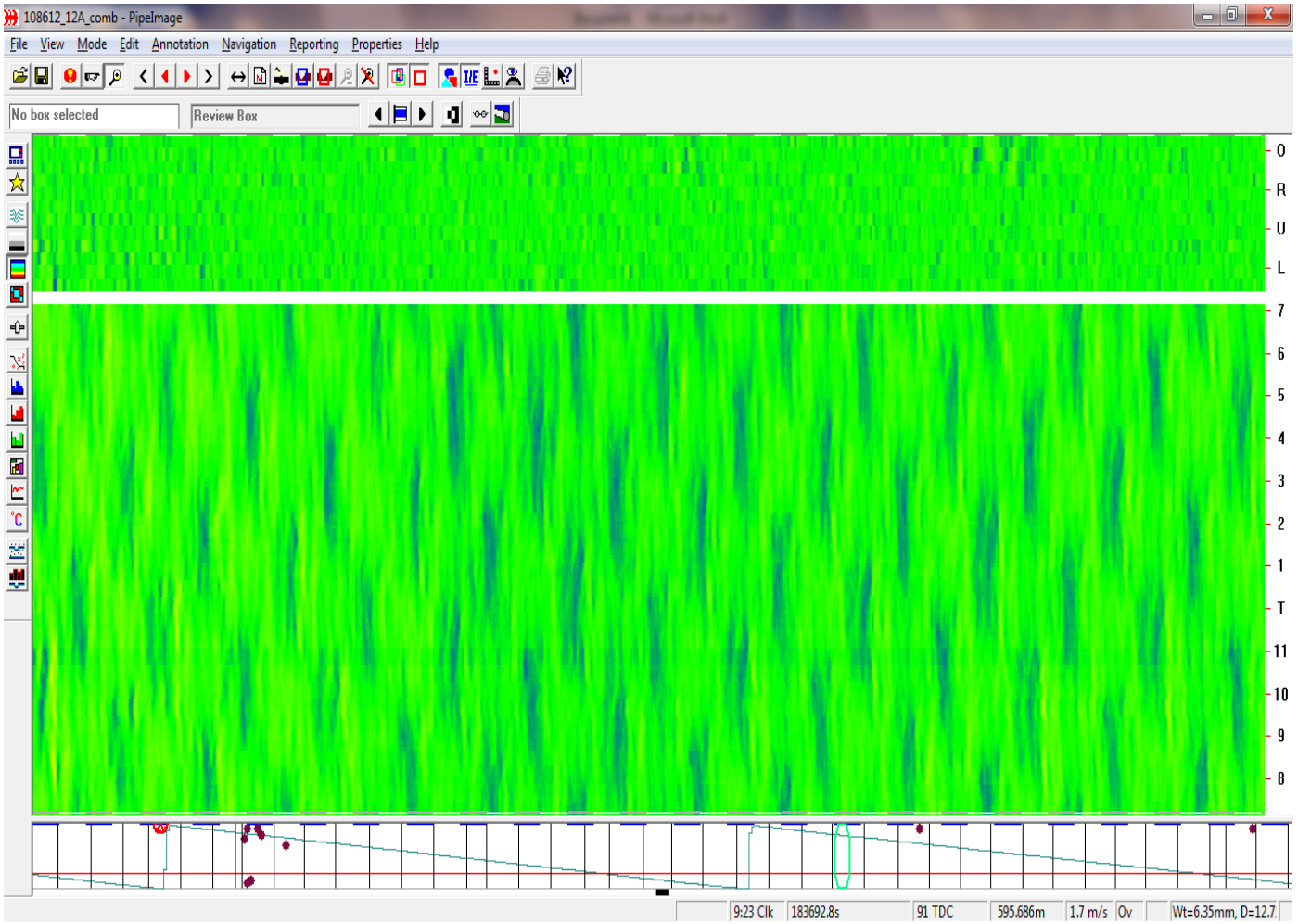
Pipeline Integrity – Case study 2 – standard pipe



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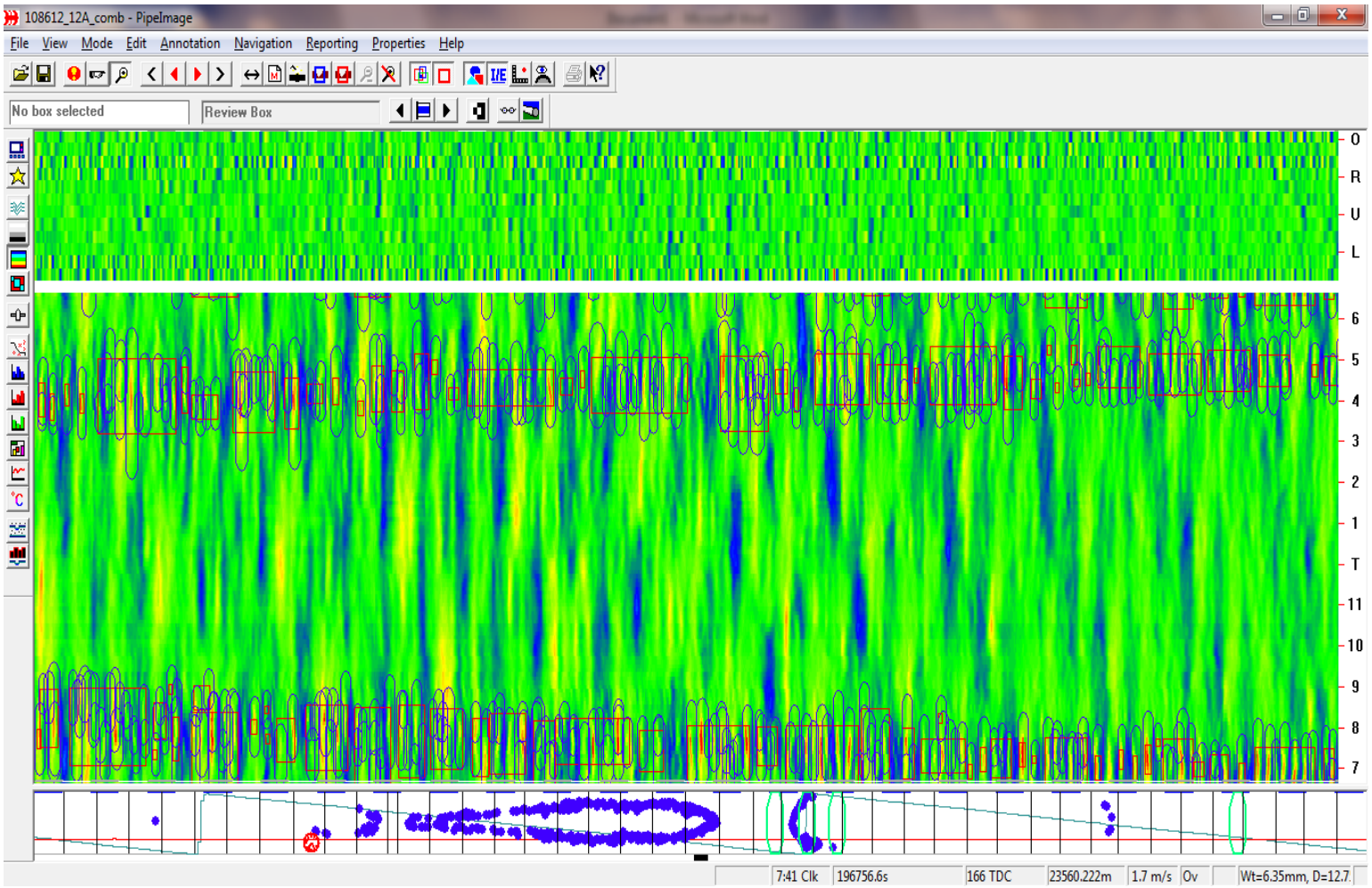
Pipeline Integrity – Case study 2 - 143m long feature



Conclusions

- Integrity management systems are effective must consider effects of aging assets
- ILI technology is improving rapidly
- Features are being identified now that have been overlooked in the past
- Existing features may be an integrity threat in totality, not necessarily individually
- Need some additional guidelines on how to filter/prioritise the risks posed by these anomalies
- DON’T REST ON YOUR LAURELS