

## UKOPA 2012 Technical Seminar



Achieving Reliability for Ageing Pipeline Networks – Neil Bethell,  
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# Achieving Reliability for Ageing Pipeline Networks

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- The issues National Grid are experiencing
- What solutions have been developed to deal with this
- Innovation – developing new solutions for the future

## The issues National Grid are experiencing



# Corrosion



# Ancillary Equipment

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# Ancillary Equipment

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## What solutions have been developed to deal with this?



## Corrosion Solutions

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- P11 Mechanical Damage Assessment
- Dressing repairs
- Epoxy Repair Sleeves
- Sealant line corrosion repairs
- Cut out and replace

# Epoxy Sleeve repair..

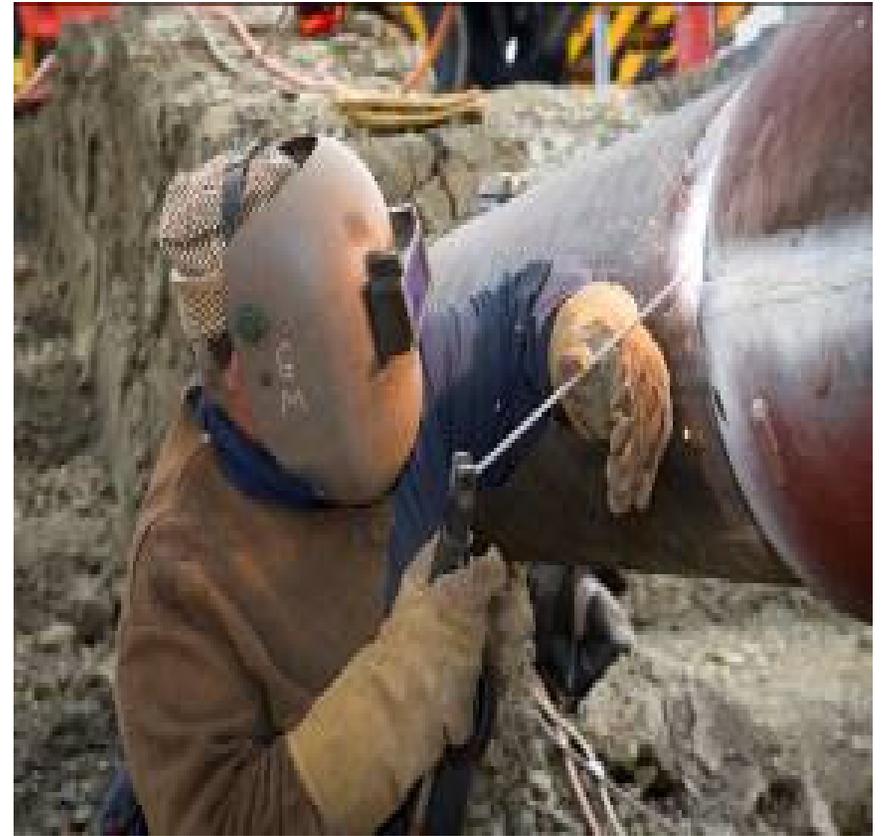


## Sealant Line Repairs..

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# Cut out and Replace



# Ancillary Equipment Solutions

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- Valve Repairs
  - Actuators – pressure cylinders and tie bars
  - Gear Box repairs
  - Stem extension repairs
  - Valve flush and lubrication including grease digestion
  - Setting operator stops correctly on hydraulic-power gas-electric and manual actuators
  - removal of actuators, gearboxes and stem extensions to check for debris on mechanical valve stops
  - also at this stage stem seal replacement on some valves can be carried out under line pressure

# Valve Repairs



# Ancillary Equipment Solutions

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- Pressure Vessels
  - Mechanical damage / corrosion / Pressure system Inspections
  - Pressure testing
  - Structural repairs & re-testing
  - Grit Blasting and re-coating
  - Full Quality Assurance to satisfy statutory requirements

## Emergency Solutions..

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- Minimum emergency materials, equipment and people to achieve repair at very short notice
- Pre-tested weld procedures to suit expected material matches
- Pre-tested pipe
- Reducers and PUP's to give greater flexibility
- Fittings, equipment and by-pass material for emergency flow stop

# Emergency Solutions



# Emergency Solutions



# Recompression



## Innovation – developing new solutions for the future



# Developing Skills & Investing in People

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- Bespoke training facility
- Assessment based competence review
- Encouraging idea development on redundant equipment
- External recognition of apprentice training scheme

# Grit Blasting and Painting Facility



## Developing new solutions

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- Lapping tool to repair leaking stem seals
- Portable venting tool to improve safety during ball valve venting operations
- Analysing performance of composite wrap technology to extend repair options
- Increasing recompression capability to lower pressure / lower volume solutions
- Trialling gas adsorption technology for vented gas storage
- Refining epoxy grouted tee solution for high flow conditions or where fast tee install is needed

# Epoxy Grouted Tee



## In Conclusion..

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- Over 40 years operating UK and Local Transmission system
- Good empirical data to feed integrity engineering knowledge
- Important that capability to diagnose faults and carry out both routine and bespoke repairs progresses at least at same rate

