



UKOPA – CATS INCIDENT

Tuesday 9th June 2009

Mark Kelso
NSI Pipelines
Engineering & Maintenance T/L

Agenda



- Introduction
- Incident
- What found
- Measurement
- Results
- Clamp repair

CATS SYSTEM



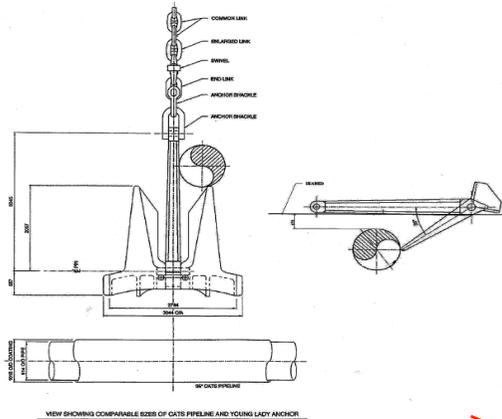
- **Operated by BP on behalf of the CATS Owners 412kms long, 36” Gas Pipeline, 28.4mm & 33.9mm wt API 5LX65 CS, glass re-enforced coal tar epoxy coated with 51mm & 76mm Concrete weight coat**
- **CATS normally transports around 1 bcf/d of gas to Teesside (around 8% of UK demand)".**
- **Significant environmental impact if loss of containment**
- **Central Area Transmission System gathering gas from the central area of the North Sea, commissioned April 1993**

Incident



- Vessel anchor snagged on pipeline
- Notified to Port Authority by vessel then de-snagged and sailed away
- ROV inspection carried out – found pipeline had been removed from trench with extensive concrete and coating damage

The Vessel



"YOUNG LADY" (source Blenheim Shipping website)

Owner: BLENHEIM SHIPPING UK LIMITED

Technical Operator: SCINICARIELLO SHIP MANAGEMENT

Built: 25 May 2000

Class: L. R. + 100A1 ESP, L1 + LMC, UMS, IGS

Length overall: 239.000 m.

Beam: 42.000 m.

Draft Summer: 14.878 m.

Gross Tonnage: 56204

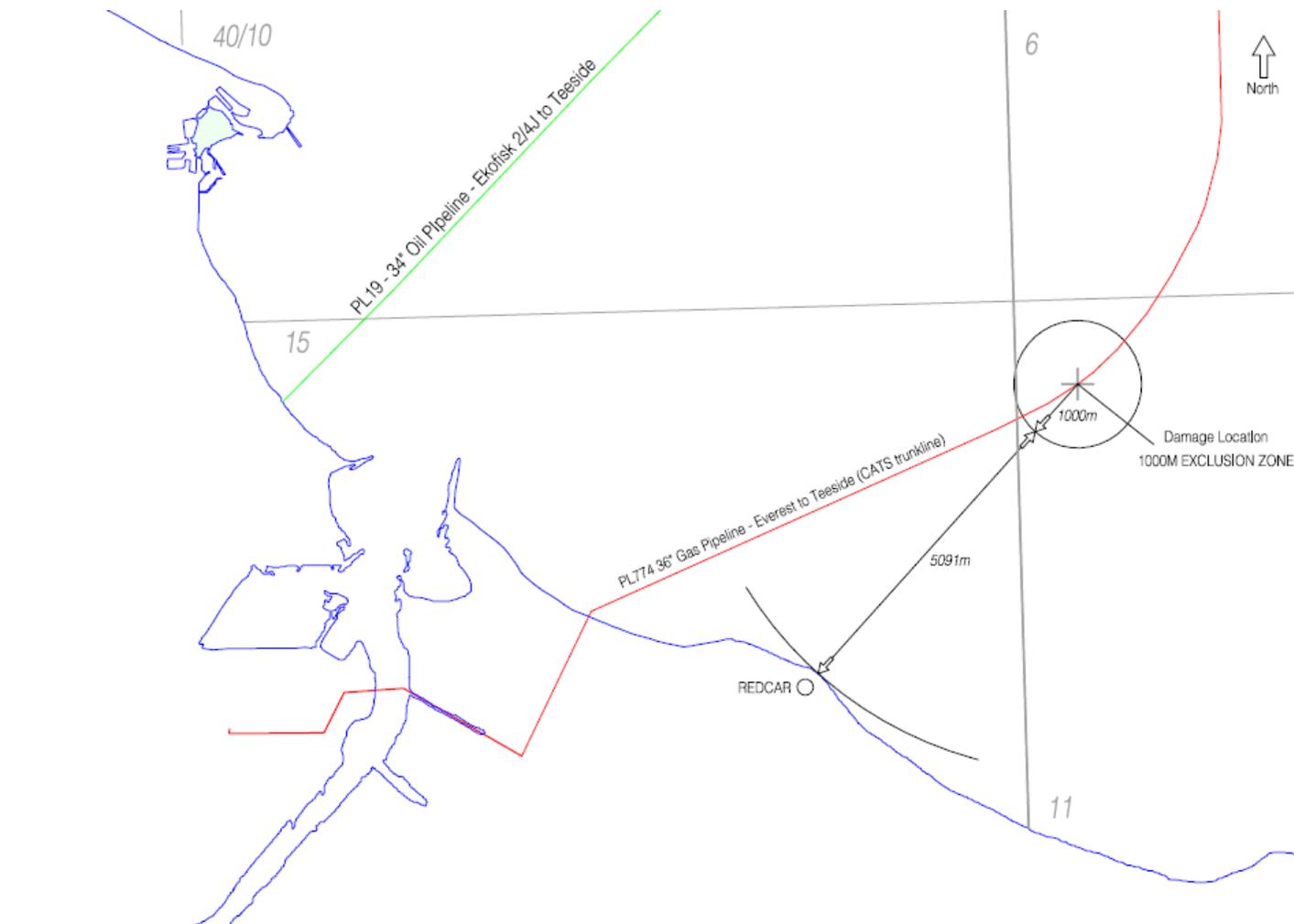
Dead Weight Summer: 105528 M/T



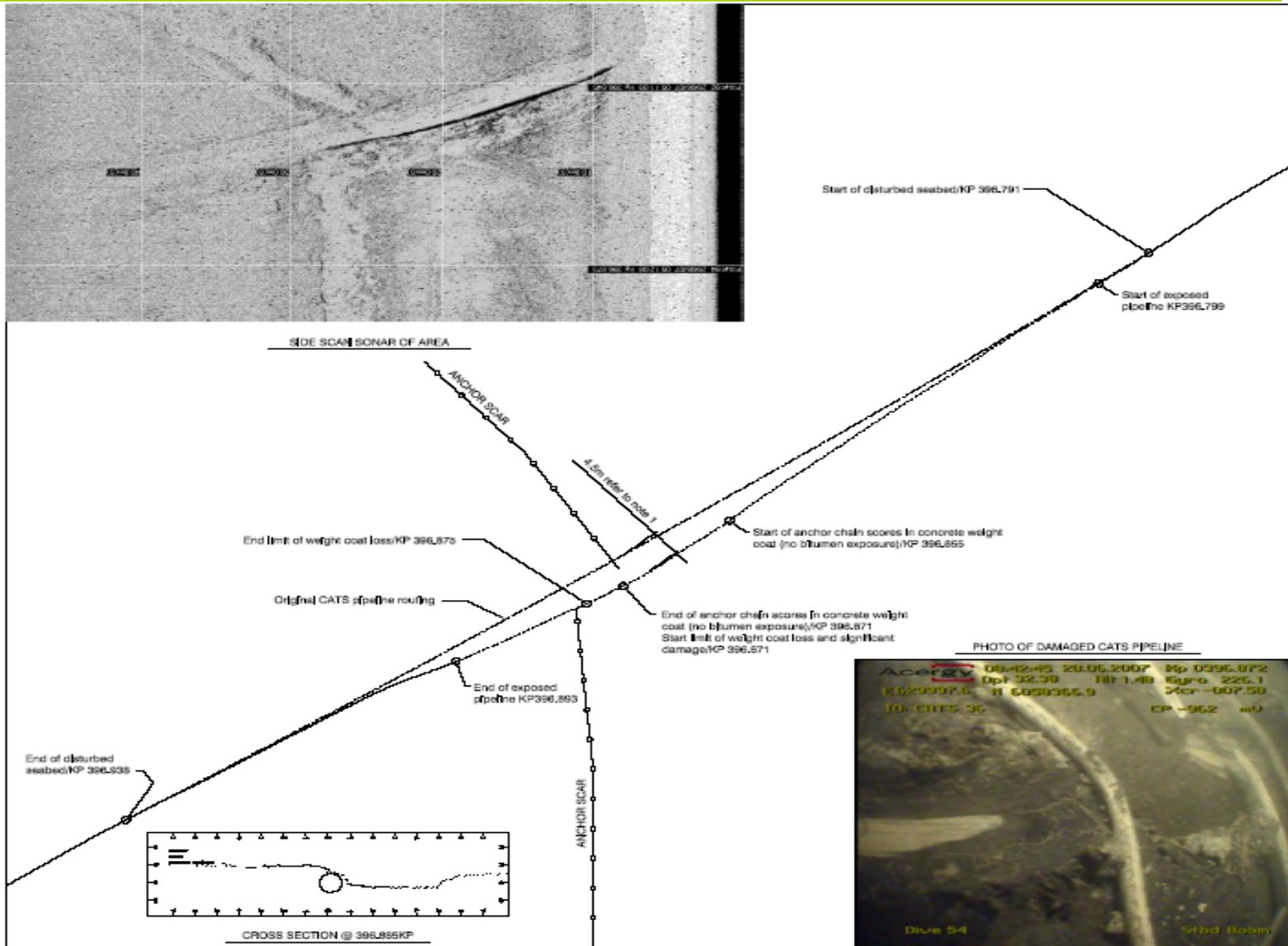
Location



- Approx 5kms offshore from Redcar, in 30metres of water



Initial Inspection



Initial ROV Inspection (3)



Initial ROV Inspection (4)



Activities

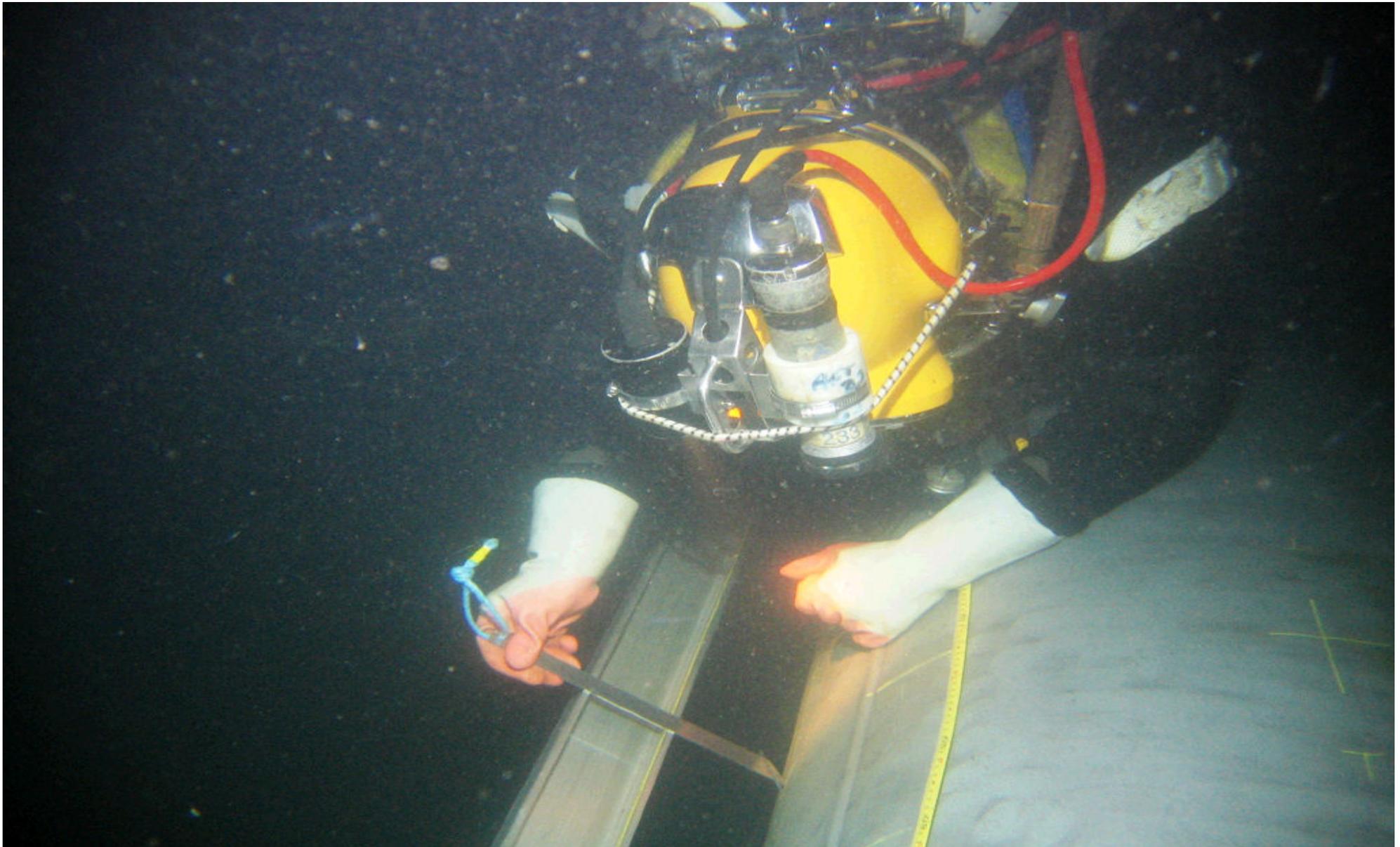


- **Pipeline depressurisation**
- **Excavation of pipeline and further ROV inspection**
- **Full excavation of pipe spool**
- **Concrete Coating removal**
- **Coal Tar Coating removal**
- **Inspections carried out**

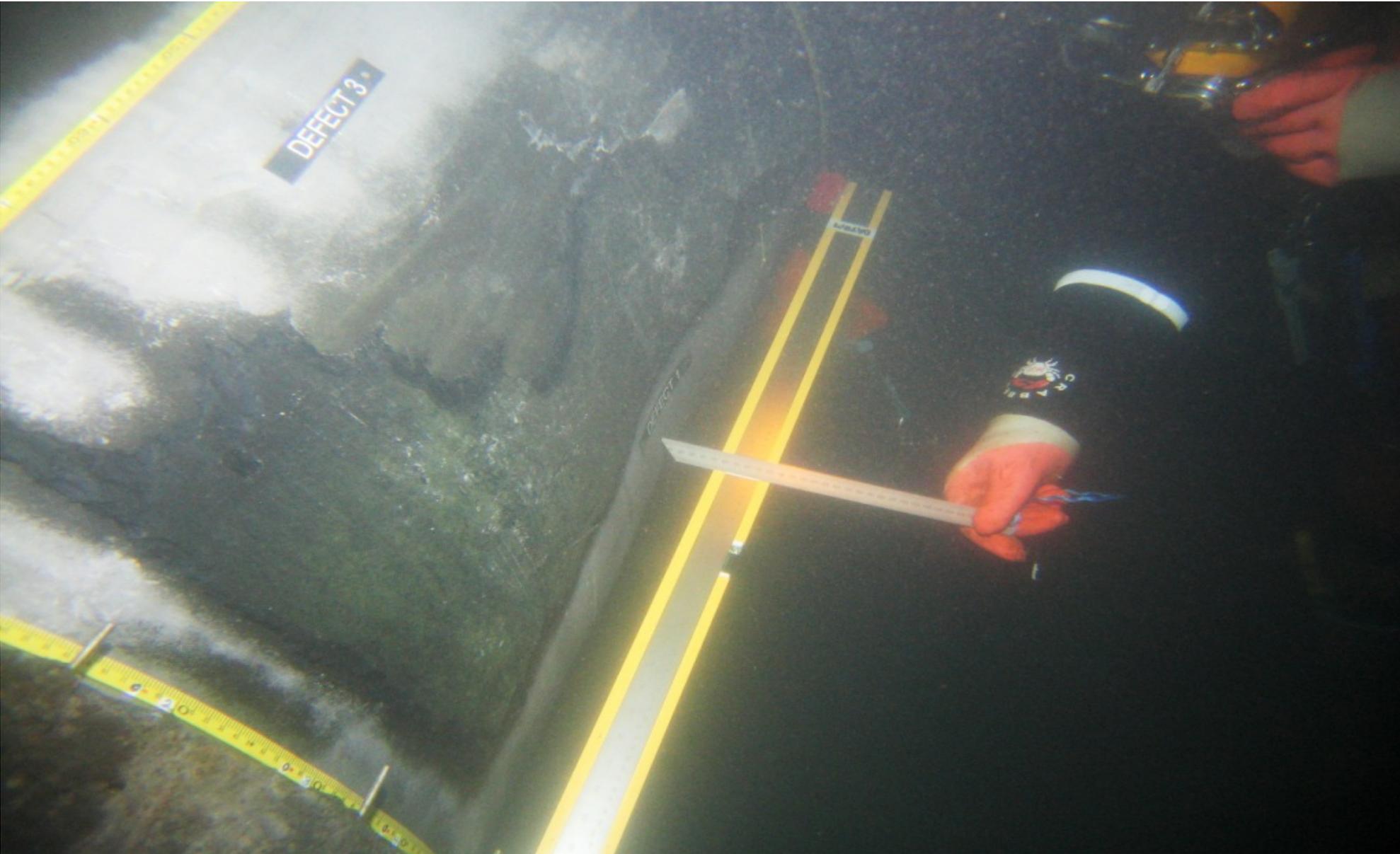
Circle Concrete Removal Tool - Trial



Metrology – Out of Straightness



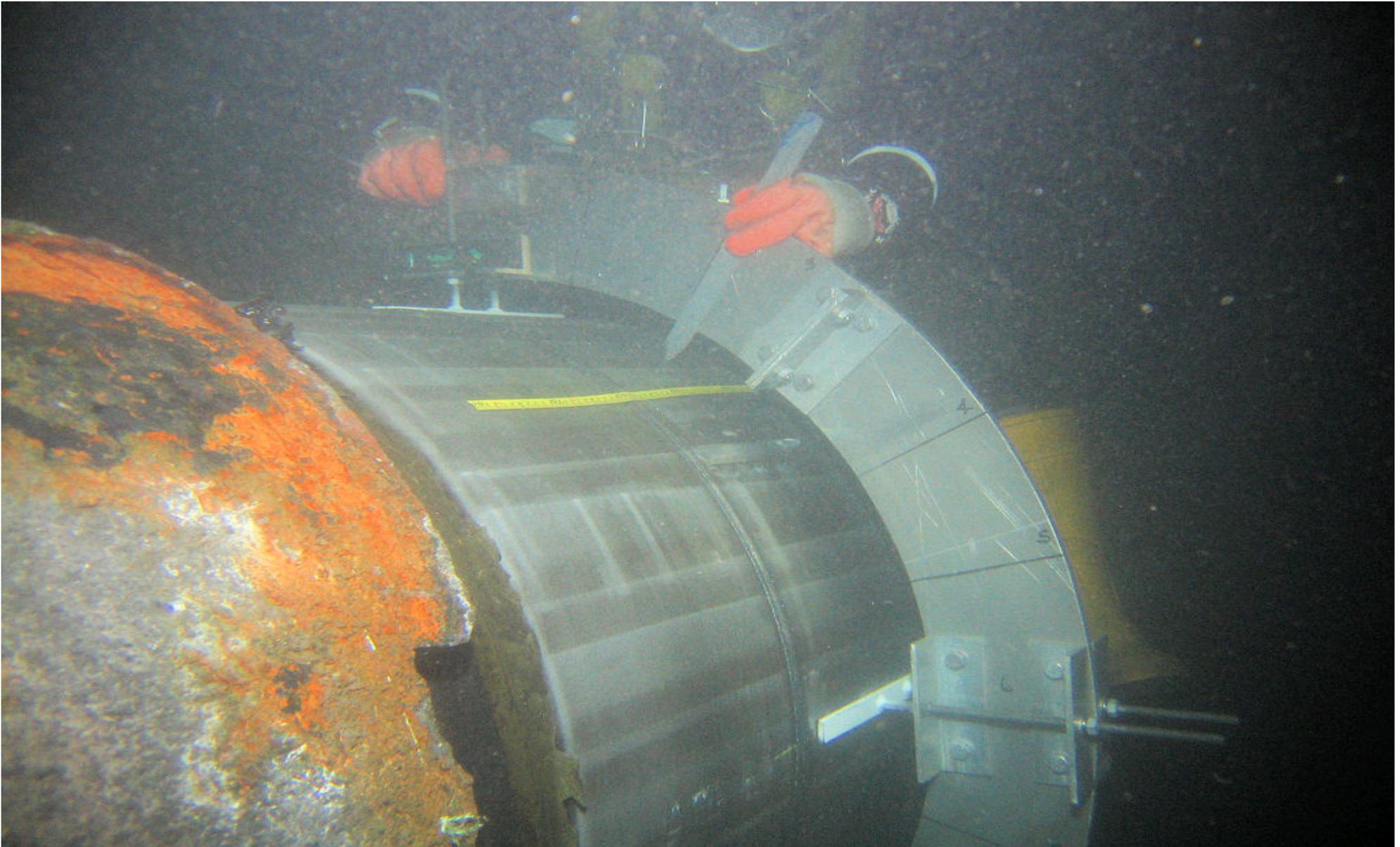
Measuring Dent 1



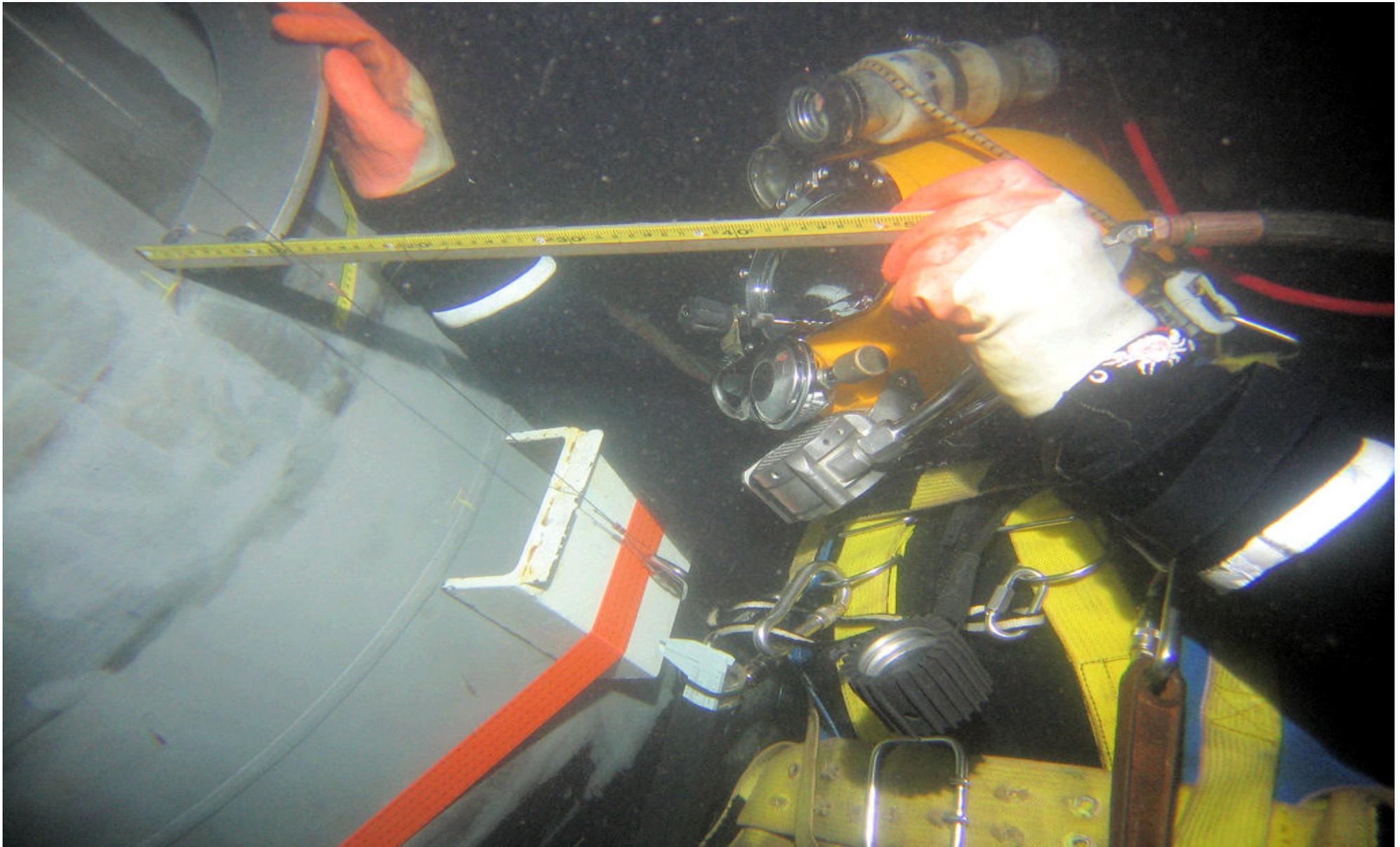
Measuring Dent 2



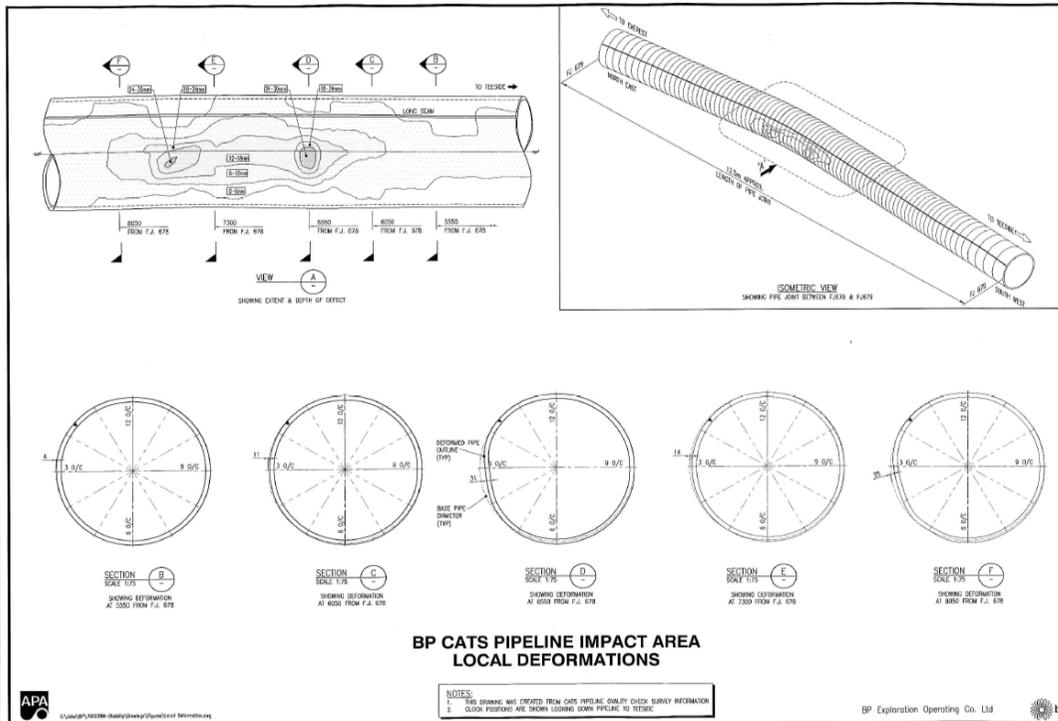
Metrology - Ovality



Metrology – Taut Wire

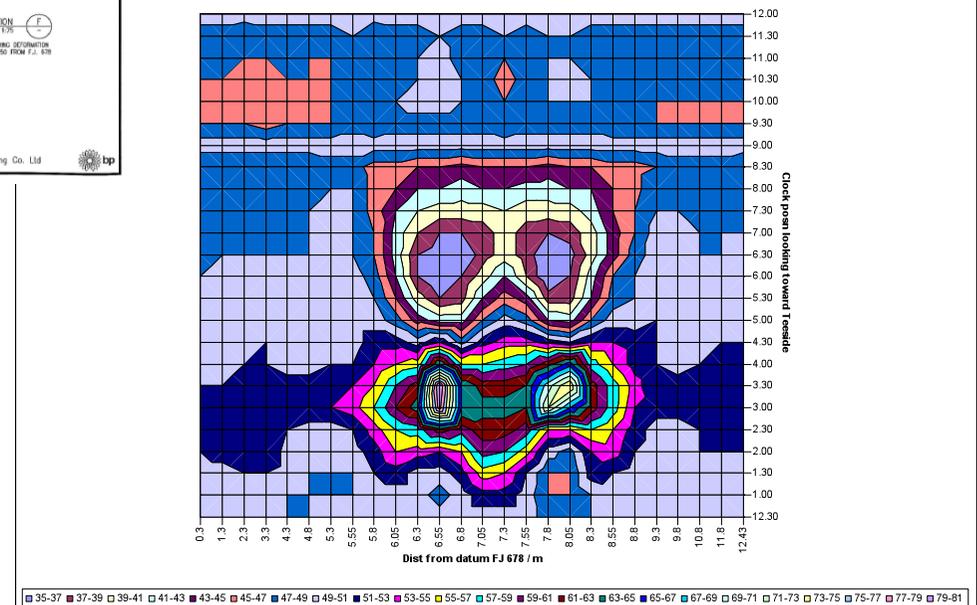


Inspection - results



1.5m vertical displacement
 4.5m horizontal displacement
 Damage over a 4m length in middle of spool

CATS Pipeline ovality checks FJ 678 to 679



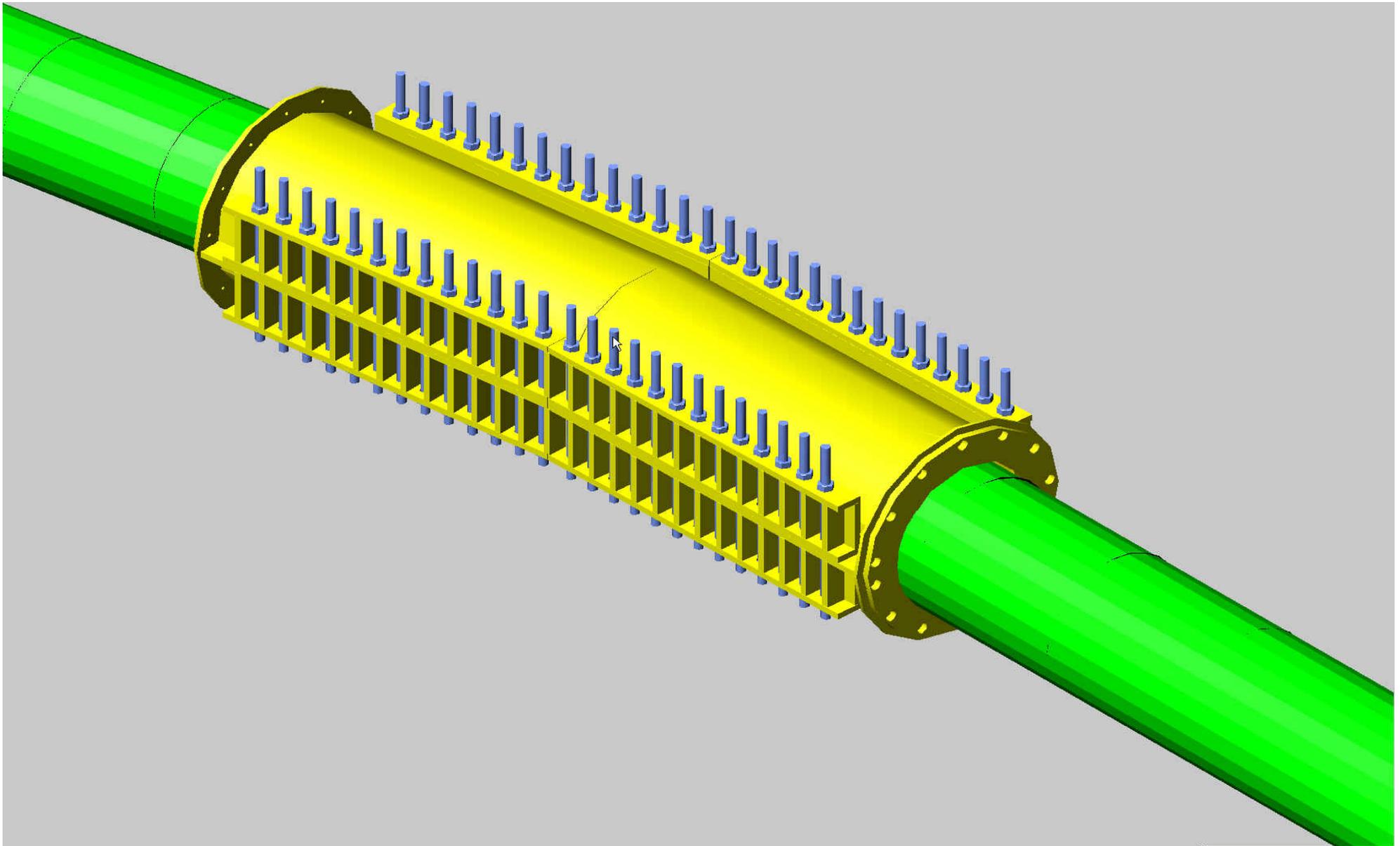
2 Dents within a larger deformed area
 31mm and 25mm max. depth (3.4%D)
 2 Protrusions of max. depth 15mm
 No ovality problems (other than dents)
 No weld defects / cracking

Decisions



- **Permanent structural sleeve repair required to address fatigue concerns**
 - **BP Engineering Technical Practices require that pipeline defects / features are assessed using the Pipeline Defect Assessment Manual (PDAM)**
 - **Assessment performed for both internal pressure (burst) and fatigue limits**

Repair - Sleeve Design



Repair – Sleeve Fabrication



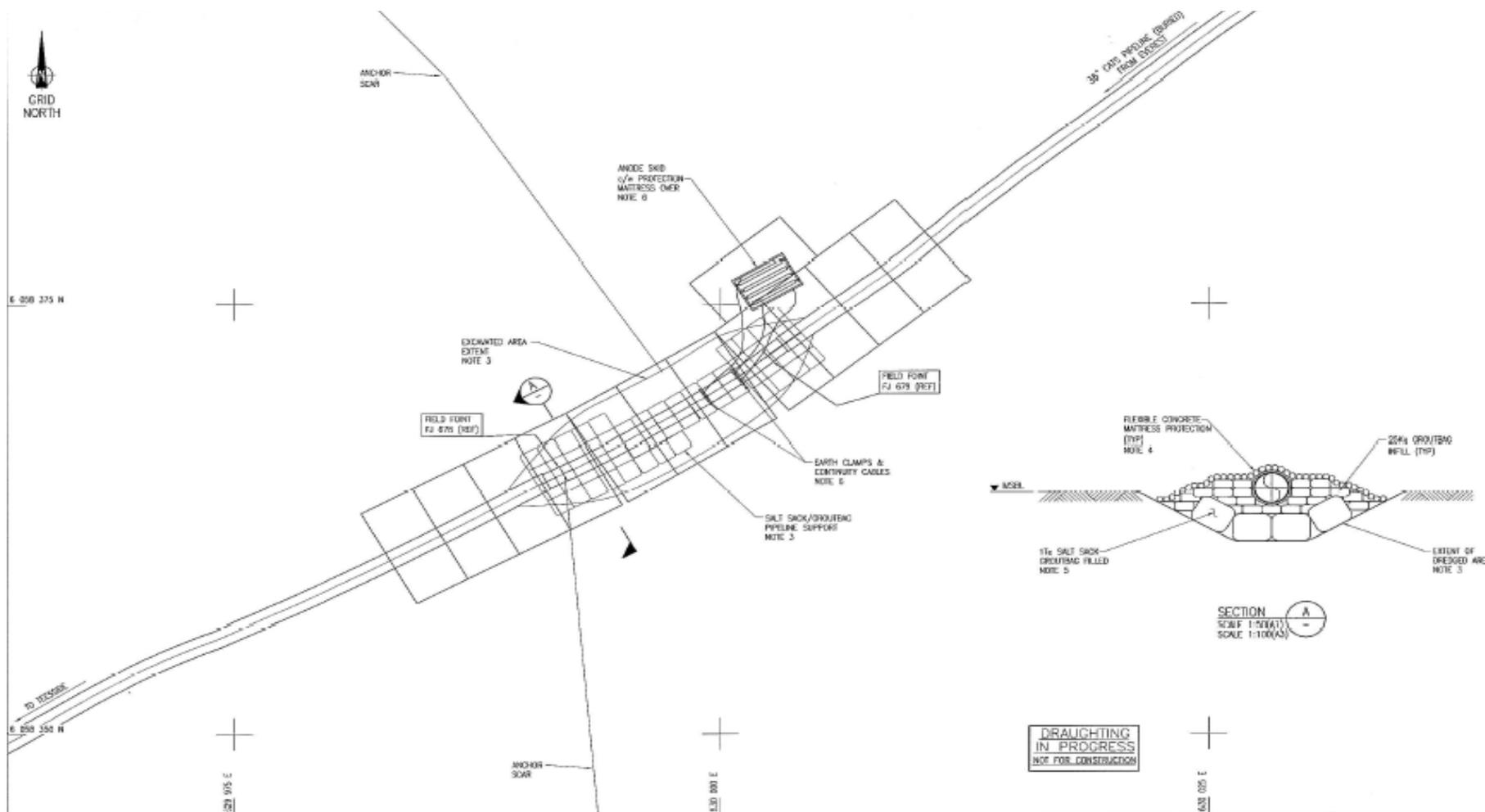
Repair – Sleeve Test



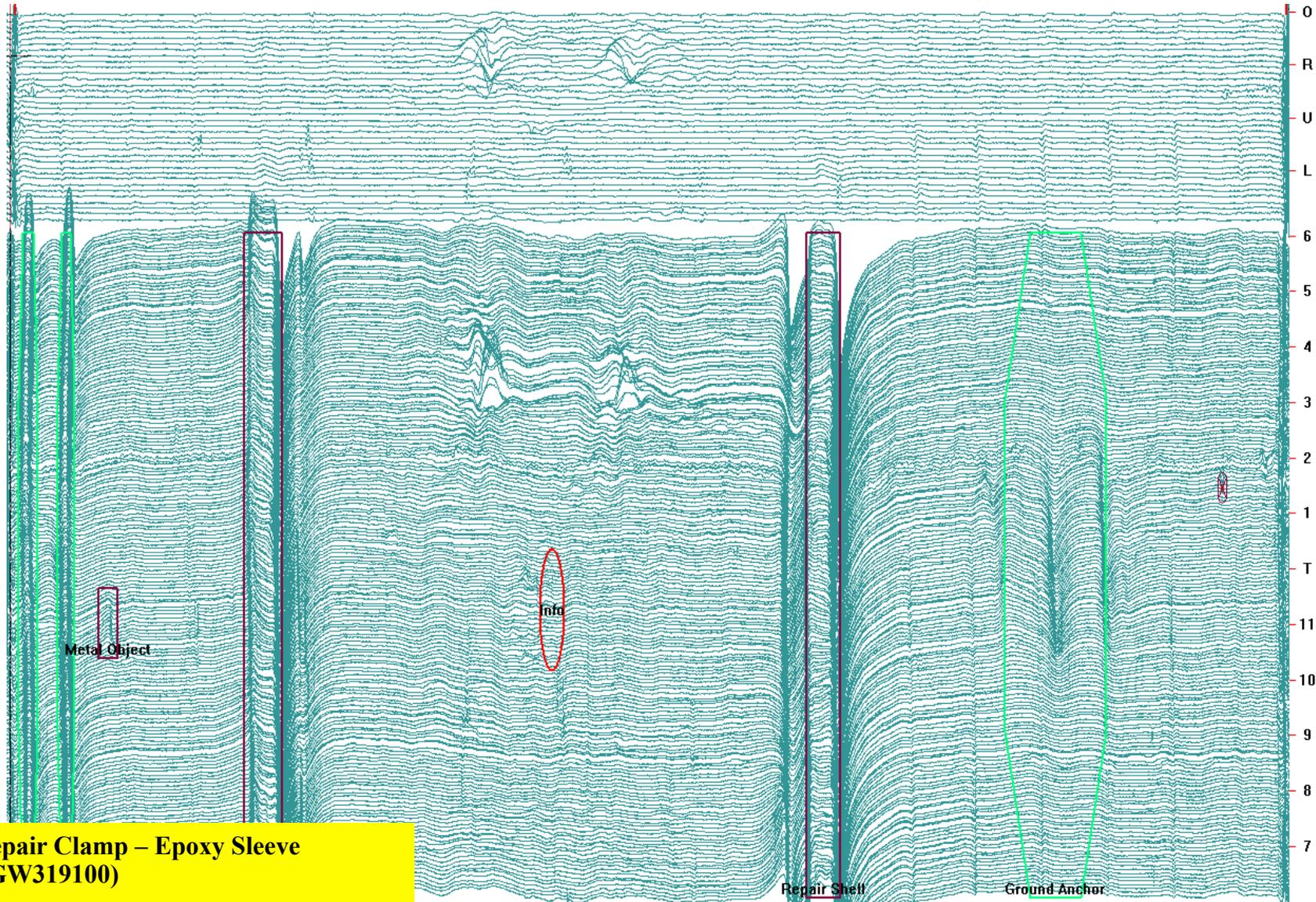
Sleeve Trial Fit



Reinstatement



Inspection Data



**Repair Clamp – Epoxy Sleeve
(GW319100)**

Absolute Distance 397072.2 m

How long did it take?



- **Incident occurred - 25 June**
- Initial survey complete – 30 June
- **Pipeline shutdown – 1 July**
- Pipe depressurised and safe to dive – 18 July
- **Detailed inspection complete – 28 July**
- Go ahead for sleeve fabrication – 29 July
- Sleeve Fabrication and Fit-Up Trials complete - 17 August
- Diving Support Vessel on location - 18 August
- **Pipeline recommissioning commenced - 24 August**
- **Delivery of on spec gas to NTS - 1 Sept**
- Rock dump complete – 2 Oct