



ICR.

INTEGRATED MAINTENANCE & INTEGRITY SOLUTIONS

Maintaining and Improving Integrity of Corrosion
Monitoring Access Fittings on Ageing Assets

Alan Taylor, 13th June 2017

ICR. INTEGRATED MAINTENANCE & INTEGRITY SOLUTIONS

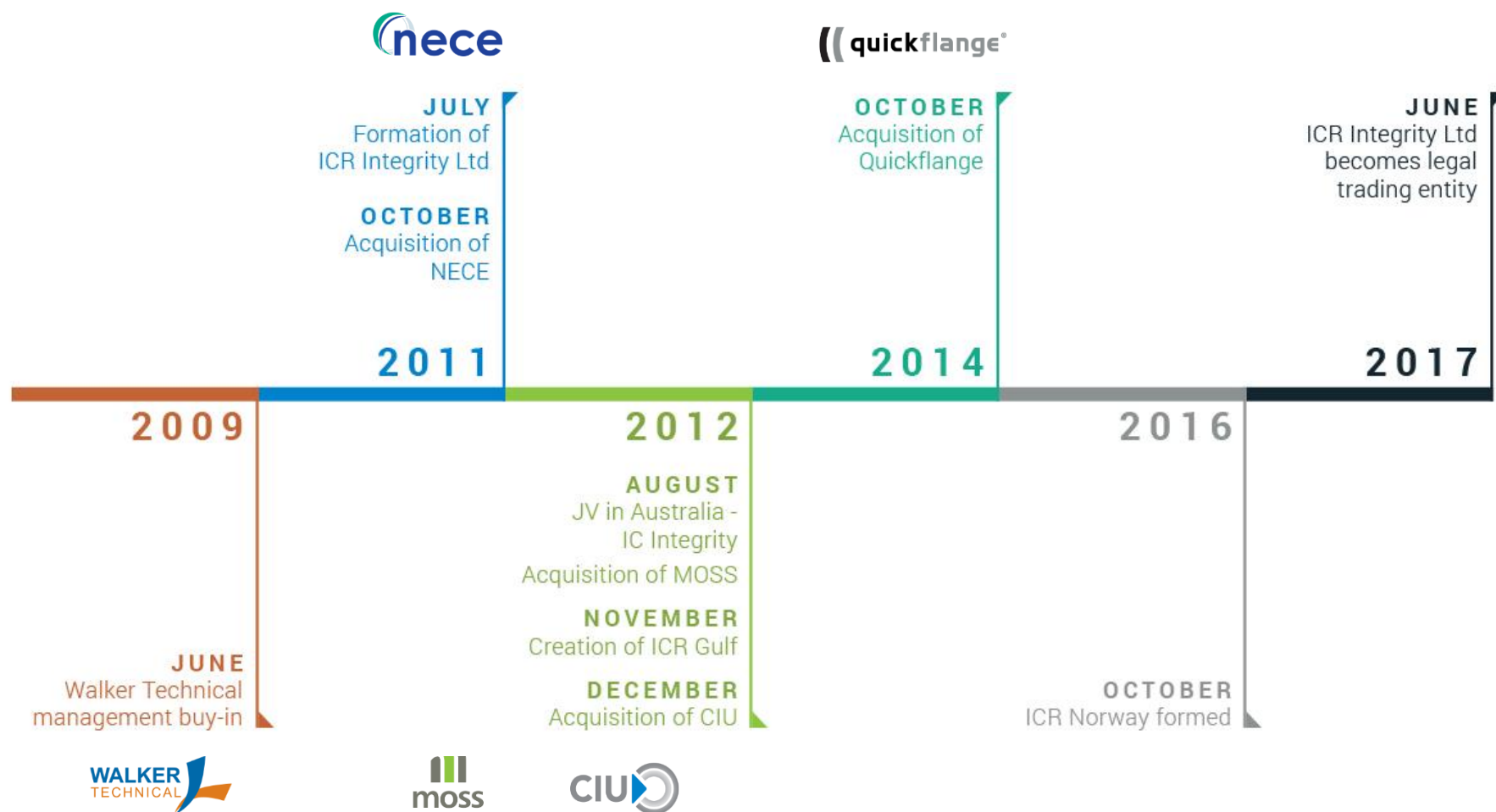
ICR is committed to delivering **smarter integrated solutions** to support clients with **maintenance and integrity** related challenges.

We provide a wide range of products, services and technologies all of which support **safe** operations, production **uptime** and operational cost **efficiency** at every stage of the asset lifecycle with a particular focus on **preservation**, **inspection** and **repair**.

Integrated solutions include:

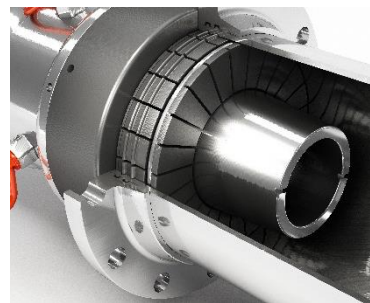
- Weldless connections
- Chemical Injection solutions
- Specialist Onsite Machining
- Integrity Monitoring
- Engineered Composite Repairs

ICR. THE ICR JOURNEY



ICR. OUR SERVICES

Weldless Connection



Technology for piping and flange repairs and modifications avoiding hot work.

- Patented, permanent pipe-to-flange connection
- Site technicians and training
- Localised joint testing
- Size and pressure ratings for most applications
- No hot work required

Chemical Injection



Specialist provider of chemical injection and metering pump units and associated equipment.

- Equipment rental and sales
- Maintenance and repair
- Extensive rental fleet
- Bespoke engineered solutions
- Offshore services

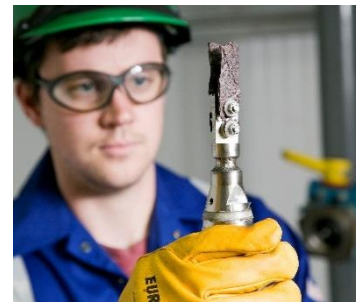
Engineered Machining



Mechanical On-Site Services. Provider of all types of specialist on-site machining.

- Hydraulic bolt tensioning
- Cold repair system - No hot work
- Spark erosion services
- Engineering support

Integrity Monitoring



Complete integrity monitoring services to help maintain assets, reducing risk and ensure productivity.

- Corrosion monitoring
- Oilfield microbiology
- Thermography
- Chemical monitoring
- Sand monitoring
- Rental equipment
- Data management
- Optical gas detection

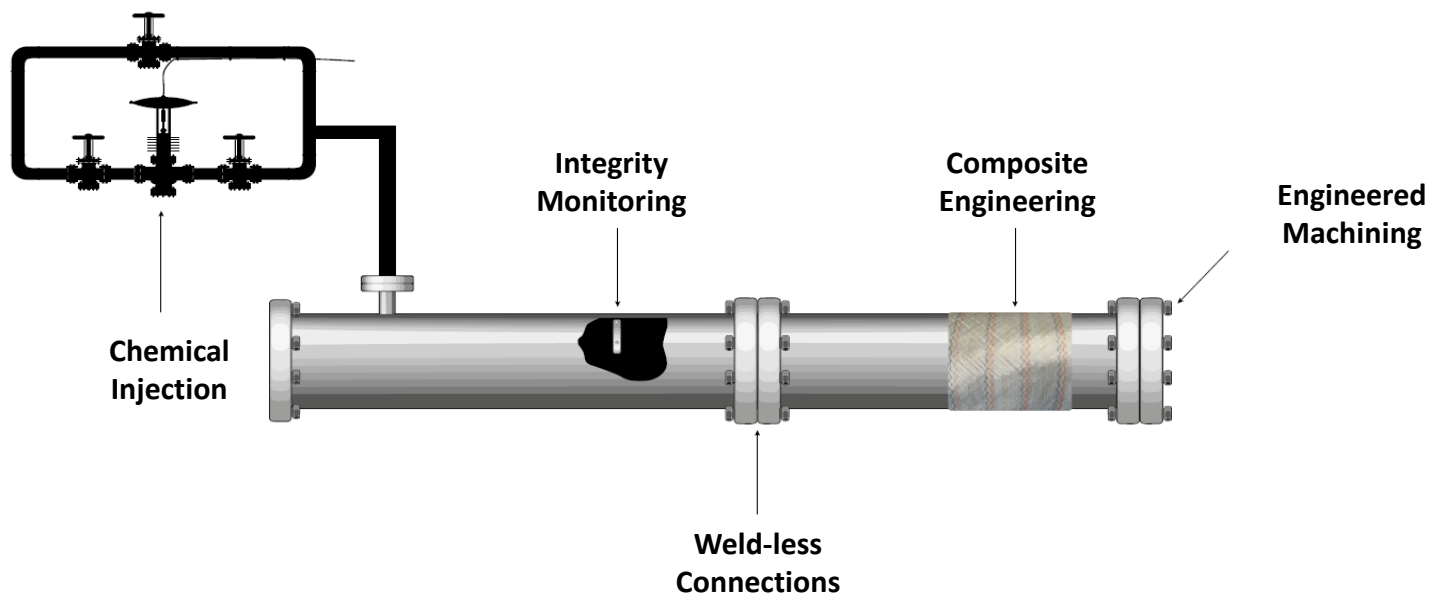
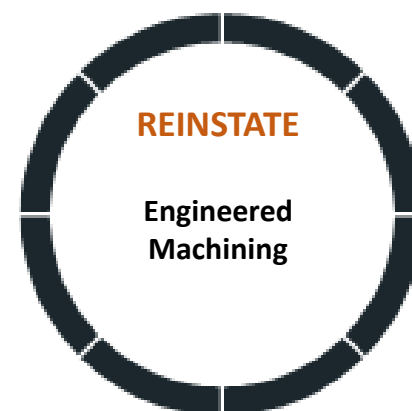
Composite Engineering



Composite repair solutions for a wide range of pipework, pipeline and structural integrity issues.

- Cold repair systems and no hot work required
- Application to live systems with no impact on production
- Exceptional strength and adaptability
- Long term alternative to steel replacement

ICR. OUR SERVICES



ICR. INTEGRITY MONITORING

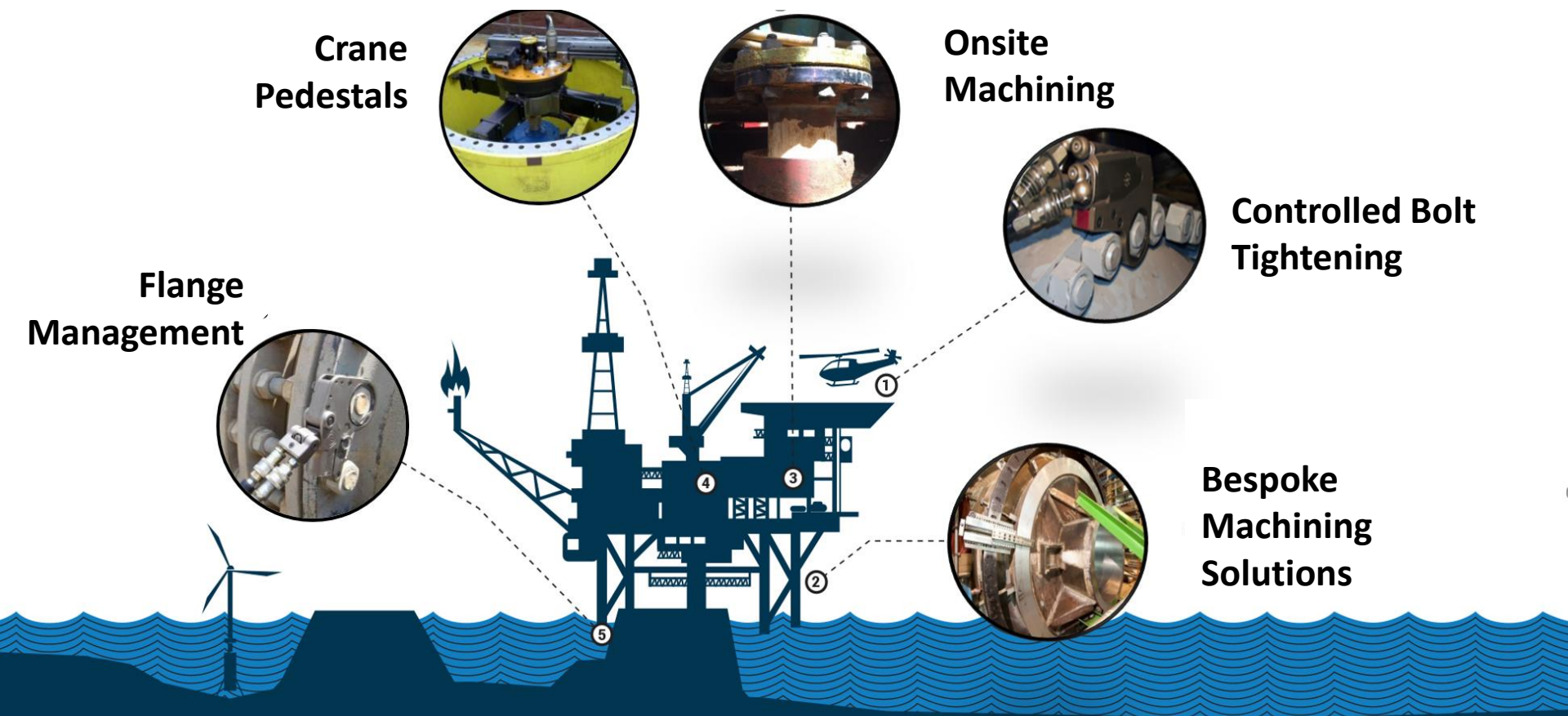
Oil & Gas platforms operate in harsh environments. As assets exceed their design life, **Integrity Monitoring** is vital for ensuring safe operations, measuring corrosion rates and providing an accurate insight into the integrity of an asset and its resultant ability to continue producing at the desired operating levels.

We provide clients' information on specific aspects of the integrity of their assets which feed into RBI (Risk Based Inspection) and RBA (Risk Based Assessment) programs and aid decision making around further inspection and chemical injection regimes. Our in-house capabilities include the supply, installation, commissioning and maintenance of monitoring solutions.

- Corrosion probe and coupon surveys including weight loss / pit depth analysis and reporting
- Routine integrity checks and evaluations
- Weight loss coupon analysis and data analysis
- Oilfield microbiology
- Technical consultancy and reporting

Our ability to combine services and therefore provide more 'joined up' information **IN-HOUSE** such as corrosion monitoring and microbiology is unique.

ICR. ENGINEERED MACHINING



We offer specialist machining solutions for rehabilitating pipework, pressure systems and structures, used globally by leading oil and gas companies, reducing the requirement for shutdown.

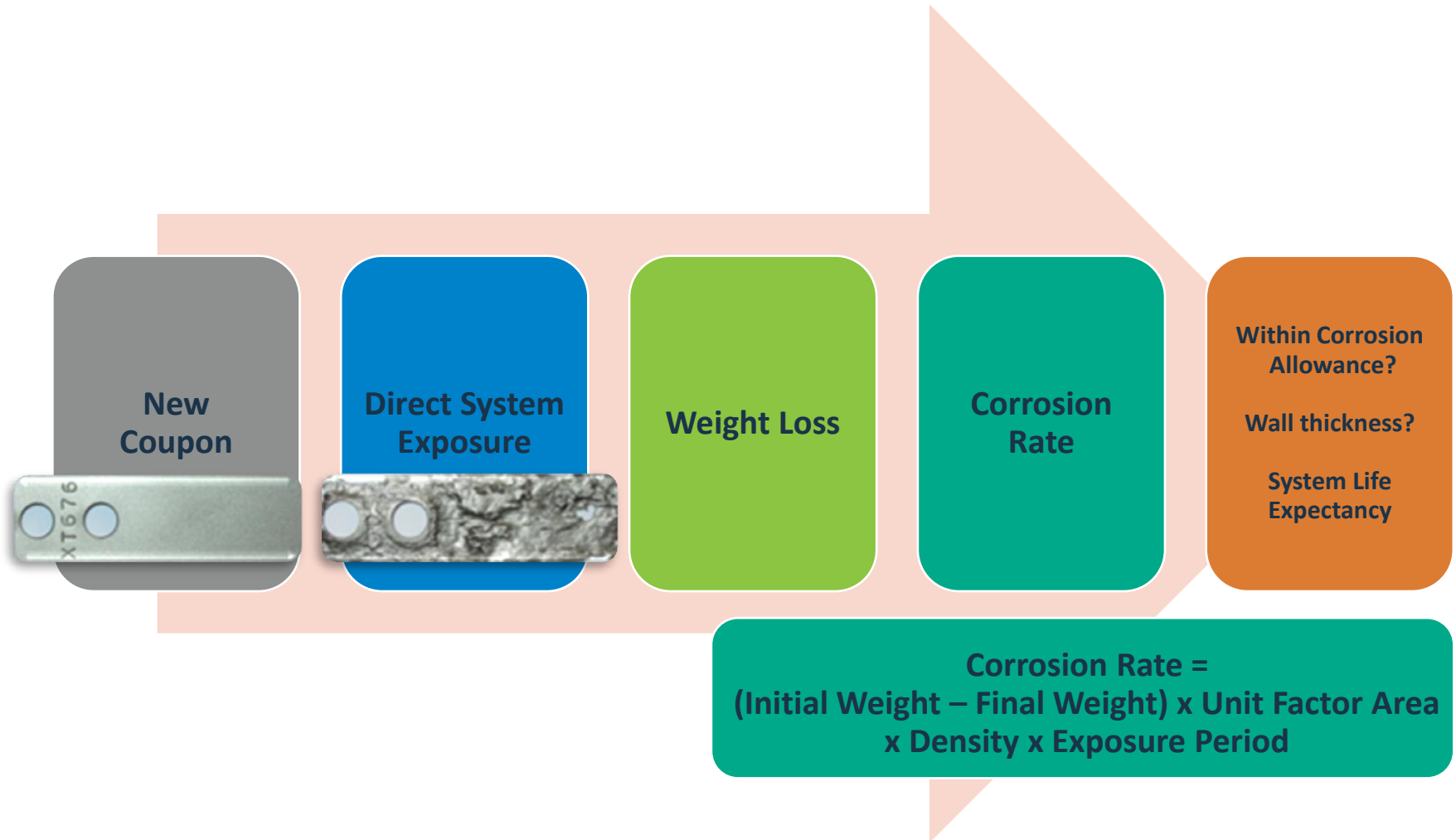
ICR. COLLABORATIVE APPROACH

By **combining** the portfolio of expertise, products, services and technologies, **ICR** are providing **smarter solutions** in response to industry wide challenges to meet our clients' needs.

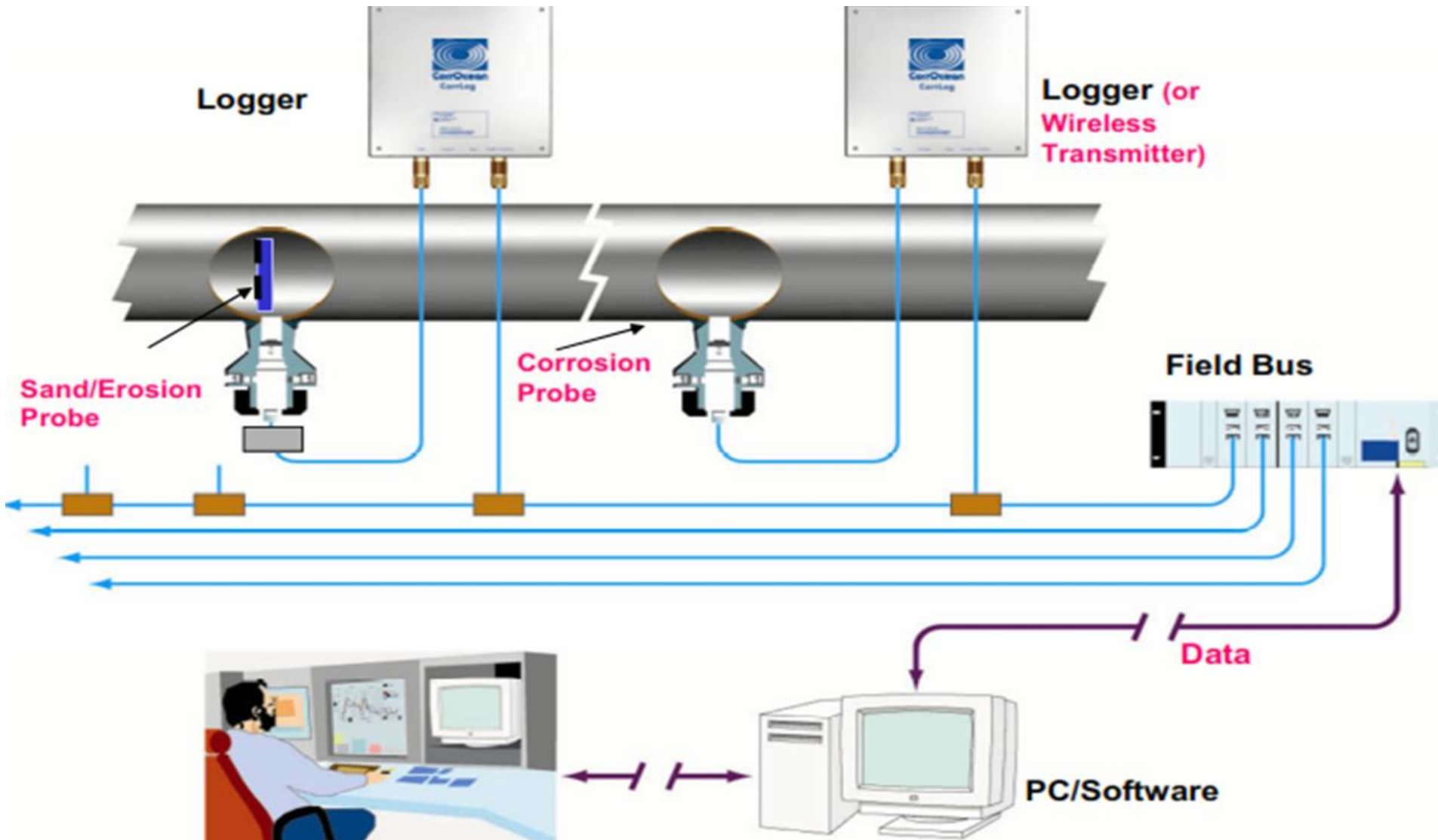


- Efficient and safe alternative method of removing seized caps
- Multi-skilled approach
- Intuitive machining equipment developed to support corrosion monitoring servicing and upgrades
- Avoiding loss of data, access fitting removals and replacements

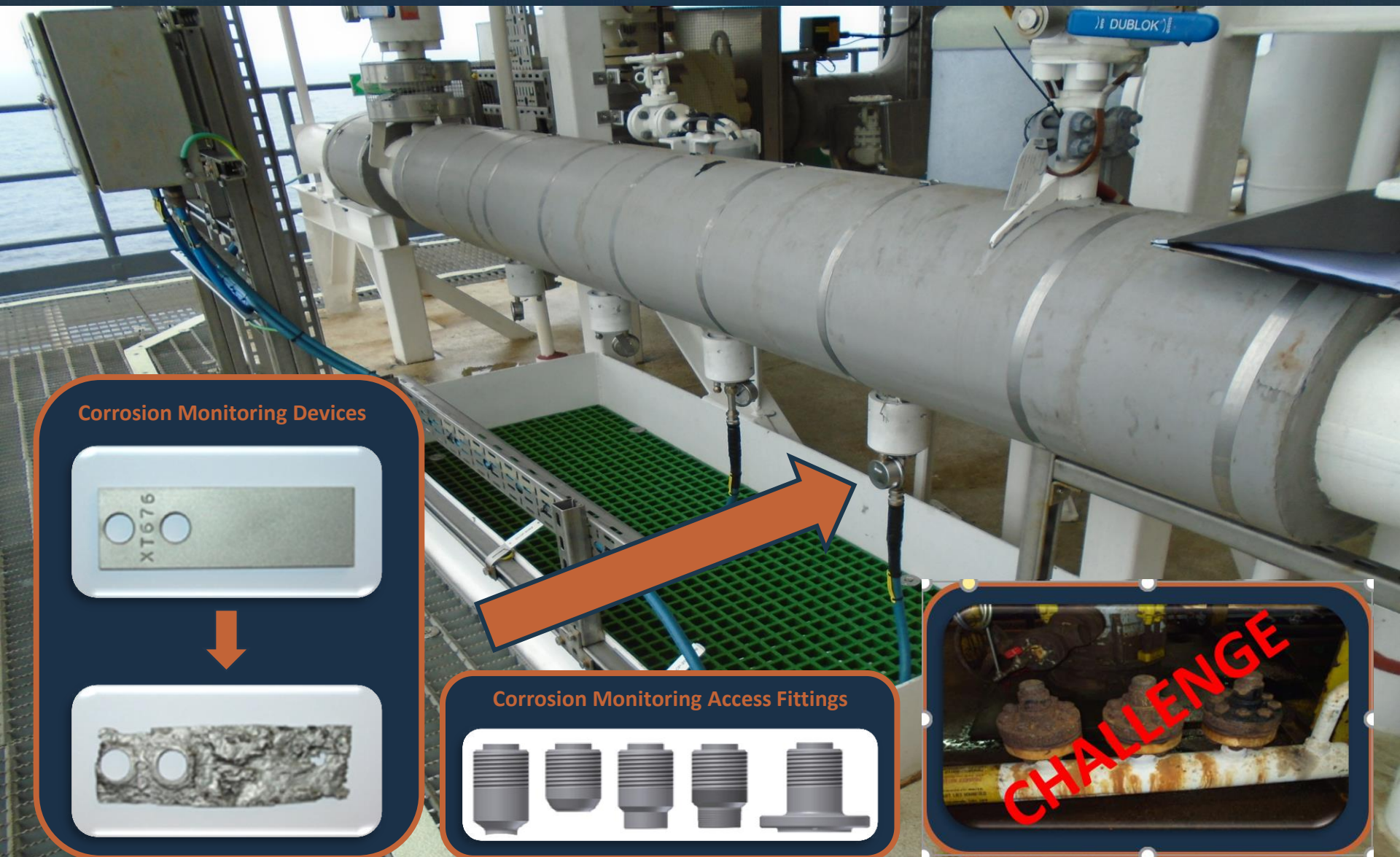
ICR. CORROSION MONITORING DEVICES



ICR. CORROSION PROBES & DATA COLLECTION



ICR. INDUSTRY CHALLENGE



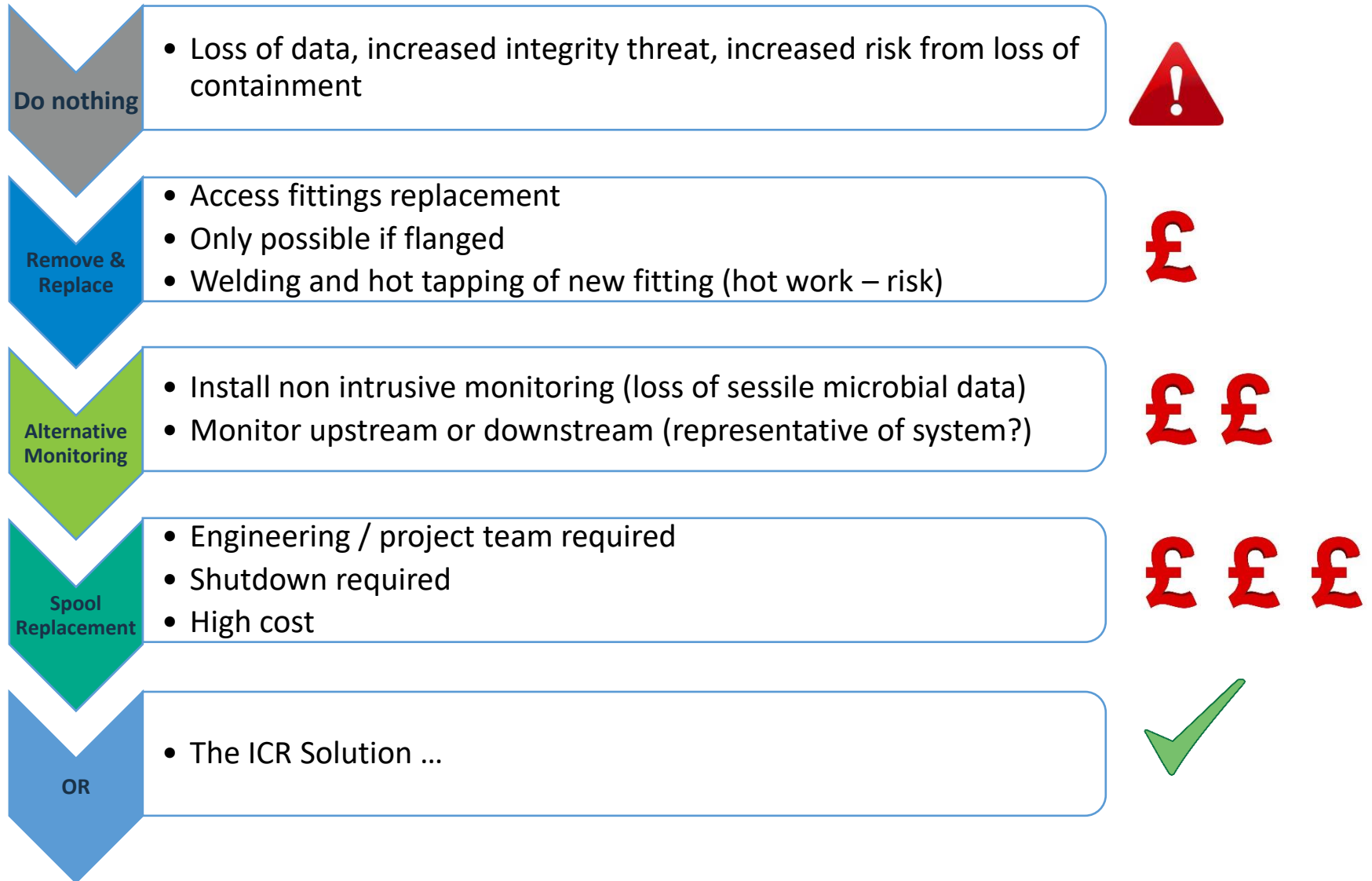
Corrosion Monitoring Devices



Corrosion Monitoring Access Fittings



ICR. CLIENT OPTIONS



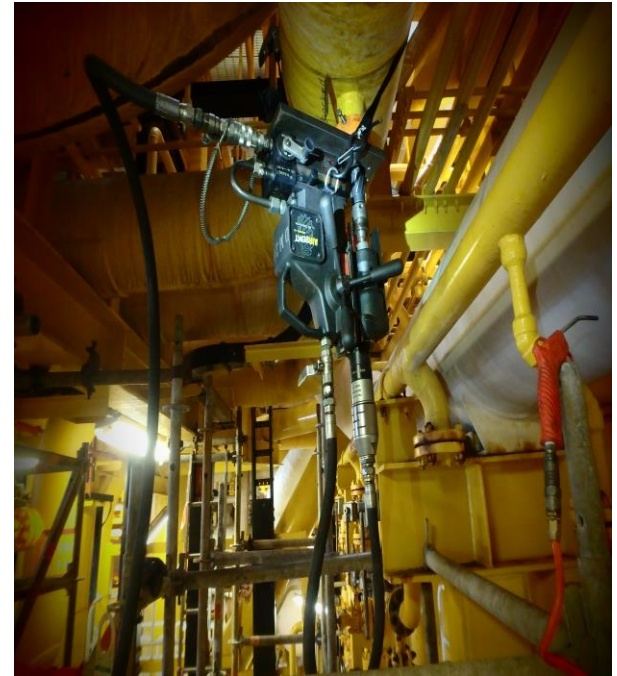
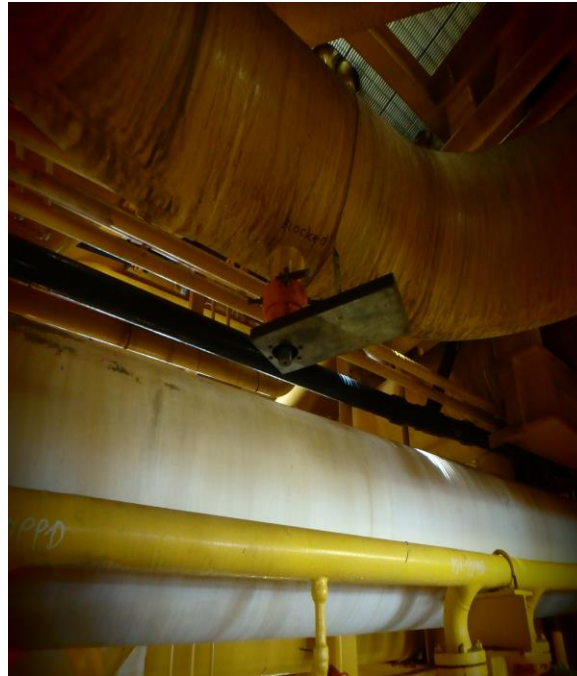
ICR. OUR SOLUTION



MACHINE SEIZED
COMPONENT AND BRING
MONITORING LOCATION
BACK INTO SERVICE



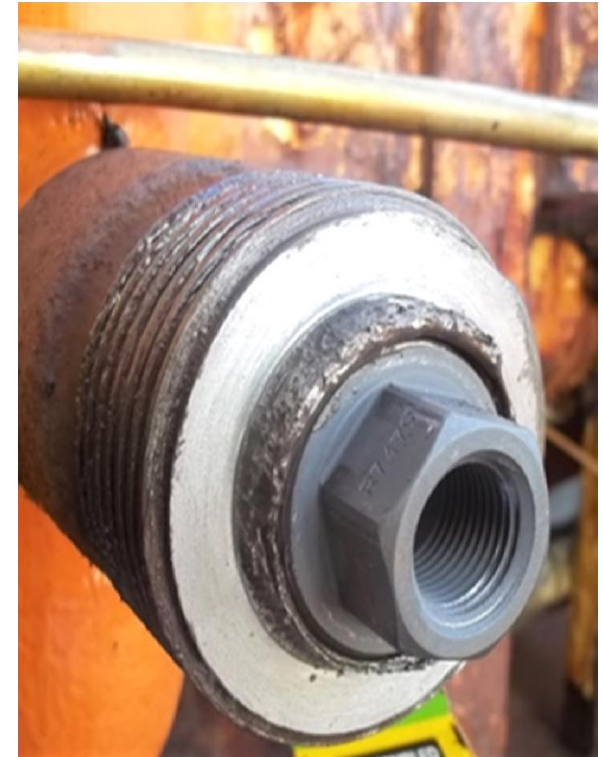
ICR. CASE STUDY 1



- Single monitoring point on critical line
- Carrier plug seized and no intrusive monitoring data was available for a significant period of time
- Client considered complete change-out of spool and welding / hot tapping of new fitting which would have meant significant cost impact and outage requirement for spool replacement
- Hot work and increased risk with welding and hot tapping with this option

Alternatively, ICR provided a solution to remove the seized plug and reinstate monitoring. The entire operation was completed in 5 hours.

ICR. CASE STUDY 2



- Flareweld access fitting was in very poor condition
- Seized cap was milled off
- Internal device changed out and renewed
- Pressure retaining cap O ring sealing face machined
- New cap fitted, monitoring device re-instated and access fitting integrity re-gained

Again, with the ICR solution, the operation was completed and access fitting re-instated within 4 hours.

ICR. RESULTS & BENEFITS



Collaborative and tailored approach using trained and competent multi-skilled teams



Efficient solution, reducing costs time and logistical benefits



Reduced number of vendors and interfaces, with one Focal Point



Fast turnaround in comparison to lead times associated with ordering replacement spools and access fittings



Associated HSE benefits and confidence of access fitting integrity



Experienced and proven track record of combining services already being utilised by many operators in the UKCS and around the world

ICR. ANY QUESTIONS?

