



Aberdeen Branch



Key Sponsor

ICORR ABERDEEN BRANCH WELCOMES



CHRIS BURKE, BENG (HONS), MIET

Oil & Gas



Oilfield Services

Achieve accurate and reliable measurements in the harshest environments whether you're pumping drilling mud, cement, or stimulation fluids.



Offshore

Reduce operational costs and improve production whether you're in a fixed, floating, or subsea environment.



Transportation & Storage

Accurately, safely, and efficiently move, handle and store product while responding to customer and market demands.



Gas Processing & LNG

Improve efficiency and reduce cost for optimized throughput and plant performance across every facet of the gas processing value chain.



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CHRIS BURKE

UPSTREAM SALES MANAGER

- BEng (Hons) Electronic & Communication Engineering – Robert Gordon University
- 20+ years experience in the Oil and Gas Industry
- 15+ years Asset Integrity Experience:
 - Support Engineer - Roxar
 - Corrosion & Erosion Monitoring Engineer - ConocoPhillips
 - Senior Engineer – Oceaneering
 - Senior Project Engineer – SMS
 - Consultant – Sandman Engineering
 - Sales Manager - Permasense



THE ROLE OF ADVANCED INSTRUMENTATION IN PROCESS INTEGRITY MANAGEMENT

IOT & Industrial Technology

- New devices
- Increased Functionality
- Industrial Wireless Technology
- Easier installation / maintenance

WirelessHART™



- Ageing Assets
- Declining Production
- Increased Maintenance / Inspection challenges
- POB Limitations



Value of Advanced Instrumentation

- Continuous Monitoring
- Remote Monitoring
- Data Visualisation & Analysis software
- Lower Installation costs

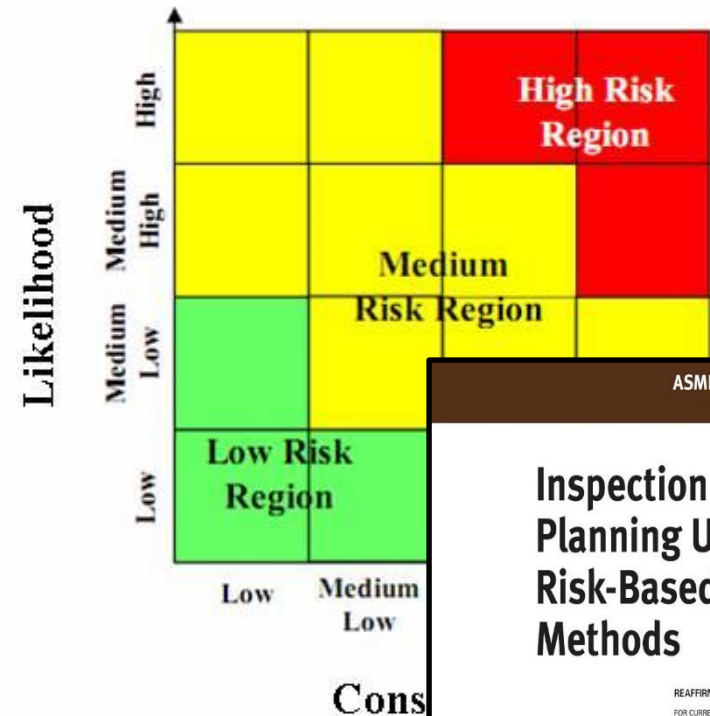


 **PLANTWEB**
insight

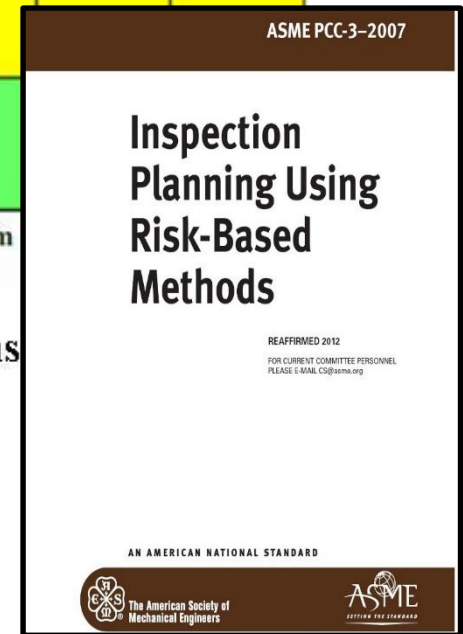


Risk Based Inspection

- Criticality = Likelihood x Consequence
- Inspection scheduling / planning



REACTIVE not PROACTIVE



CO₂ Corrosion Modelling Example

NORSOK M-506 Corrosion Rate Model, Rev. 2, June 2005

NORSOK M-506

CO₂ CORROSION RATE MODEL

The NORSOK M-506 corrosion rate model calculates the CO₂ corrosion rate on basis of given temperature, pH, CO₂ partial pressure and shear stress.

The model is valid for temperature 5 - 150 °C, pH 3.5 - 6.5, CO₂ partial pressure 0.1 - 10 bar and shear stress 1 - 150 Pa. The model is not applicable when the H₂S partial pressure is higher than 0.5 bar, or when the ratio between the partial pressure of CO₂ and H₂S is less than 20. The model can lead to underprediction of the corrosion rate when the total content of organic acids exceeds 100 ppm and the CO₂ partial pressure is less than 0.5 bar.

Continue Exit Information

NORSOK M-506 Main menu

Input

Project

Equipment

Identifier

Temperature °C

Pressure bar

Mole percent CO₂ in gas mole%

Shear stress Pa

pH

Glycol concentration 0 %

Inhibitor efficiency 0 %

Comment

CO₂ fugacity bar

Run the corrosion rate model

Calculate corrosion rate

Options on input

Use as input: CO₂ pressure
 CO₂ fugacity

Calculate shear stress

Calculate pH

Options

Parameter study

Accumulated corrosion

Calculate humidity

Print

Save in new file / Load file

Save in current file

Show current file

Help

Exit

Output

Corrosion rate without inhibitor effect mm/year

The Role of Advanced Instrumentation in Process Integrity Management

- Real-time monitoring of process parameters
- Trend changing process conditions
- Verify integrity of plant equipment & pipework
- Predict future rates of corrosion



Integrity Advantages of Advanced Instrumentation

- Monitor high risk locations
- Monitor difficult to access potentially hazardous locations
- Verification of RBI methodology
- More efficient scheduling of inspection resources



Operational Advantages of Advanced Instrumentation

Process Optimisation

Higher plant availability requirements

Longer runs between maintenance shutdowns

Tighter HSE regulations

Tighter CAPEX budgets

More remote/unmanned or ageing assets

Data-driven decision making

Increased margin \$

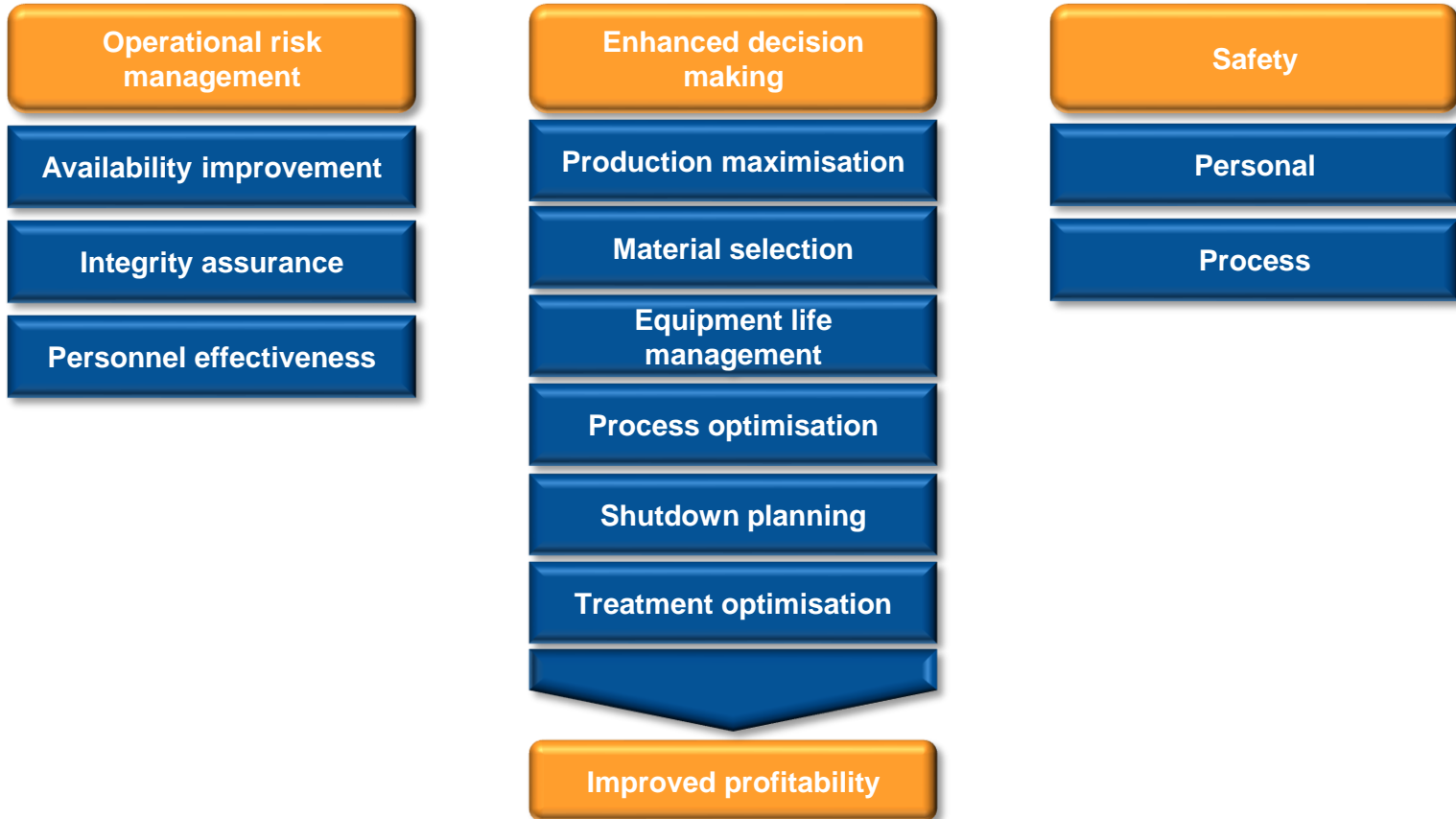


Leaks/ loss of containment

Overly conservative operations

Reduced margin

Improved Risk Management, Profitability and Safety





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**THANK YOU FOR YOUR ATTENTION
ANY QUESTIONS?**