Design the Risk **OUT** – not its Mitigation **IN**

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One Birdcage Walk

Integrity Management Strategy

Dr John Lawson
Senior Technology Advisor
Chevron Energy Technology Company

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Overview

- Introduction
- Pipeline Design and Operation Codes
- PSE 17/2 and PL Committee
- PD 8010 – Parts 1 & 3 / 4 / 5
  - High level published in UK with UK national foreword pointing to HSE position – PD8010
  - PD8010 – part 4 is IM – it has 3 parts . . . .
- PLUG
  - An Introduction to Pipeline Users Group
  - History and synopsis
  - Typical Business
  - Integrity and Reliability Guidance Publications
- The future for IM
Introduction

- Integrity is:
  1. Identify the risk
  2. Identify its probability
  3. Quantify the damage
  4. Reduce the risk
  5. Implement its mitigation

- There is a better way to ALARP

- But first . . . .
Potential IM tool #1
Pipeline Design and Operation Codes

- Take PD 8010
  1. Design the PL
  2. Commission
  3. Operate
  4. Implement the mitigation??

- But Needs an IM section
- The Best way to operate would be handy
Potential IM tool #2
PSE 17/2 and PL Committee

- Who writes PL codes?
  1. O&G PL Engineers
  2. PL Installation Engineers
  3. Steel mill people
  4. People who sit on other committees
  5. Everybody here

- PD8010 Parts 1 to 4
  1. Onshore PL design
  2. Offshore PL Design
  3. Onshore PL Risk Assessment
  4. Integrity Management of PLs
     - Integrity and Reliability Guidance Publications
     - Writing a new part 4 – IM of PLs Offshore and on land
     - Going to public comment – you should read and comment
Potential IM tool #3
PLUG

- An Introduction to Pipeline Users Group
- PLUG
- History and synopsis
- Typical Business
  - HSE / DECC O&G UK
  - UKOPA
  - A 2nd look at issues from last meeting
  - New Issues
  - PARLOC
  - Influencing the Code Writers
  - PL Operational guidance
HID Specialised Industries Unit 3 (SI3) Pipeline Integrity Management Delivery Guide for Offshore Pipelines

– Effective asset integrity management should be a priority for industry. A key objective for SI3 (Gas & Pipelines Unit) is to ensure that the integrity of pipelines and associated equipment is maintained in accordance with industry good practice.

• proactive steps
• sharing lessons learned from investigations
• Performance ratings
• 4 Core issues
The future for IM – more tools

- Let’s go back to Design
- Let’s look at some of the greater risks
  - Corrosion
  - Wax
  - Hydrates
Corrosion

- Parameters
  - Steel
  - Oxygen
  - Water
  - $\text{H}_2\text{S}$
  - $\text{CO}_2$

- Take the corrosives away

- **Make it so it does not matter**

  Design them out
  - Stainless
  - Composite
  - Cold flow
  - Subsea processing
  - Parameter prediction
Wax

- Parameters
  - Temperature
  - WAT

- Take the wax away

- Make it so it does not matter

  Design them out
  Stainless
  Composite
  Cold flow
  Subsea processing
  Parameter prediction
Hydrate

- Parameters
  - Pressure
  - Temperature
  - Hydrocarbon gas
  - $\text{H}_2\text{O}$
- Take them away
- **Make it so it does not matter**

Design them out
  - Stainless
  - Composite
  - Cold flow
  - Subsea processing
  - Parameter prediction
A Few More

- Dropped Objects
- Fishing interaction
- Anchors
- Icebergs

You cannot mitigate against these so we design them out

So if we can design them out . . . . . .
Make it so it Does Not Matter

- Design them out
  - Stainless
  - Composite
  - Cold flow
  - Subsea processing
  - Parameter prediction
Use These in the Design Phase

- BSI et al
- HSE Guidance
- PARLOC
- RIDDOR
- PLUG Guides to PL Operational practice
- More R&D – focus on designing out
- Get to **THE ROOT CAUSE** through a fresh pair of eyes!