BACKGROUND
With over forty years of oil and gas production in the UK sector of the North Sea, a significant number of platforms are approaching or have exceeded their original design life, typically specified at 20 or 25 years. Over 50% of the total population of fixed platforms on the UKCS has exceeded the original design life and this proportion is steadily increasing with time. There is a continued requirement to produce oil or gas including, where hydrocarbon reserves are being depleted, the increased use of enhanced oil recovery together with the possibility of future O&G redevelopments, and hence the majority of installations are likely to remain operational for a significant period of time in the foreseeable future. Indeed, in some cases, there are plans to extend the operational life to multiples of the design life to the middle of the century.

The challenge:

**Lose of life**
**Loss of business**
**Loss of reputation**
**Loss to the business (which could eventually lead to company fold)**
**Loss of assets**
**Compensation etc.**

**Consequences**

--This is an example of various potential consequences that could result from the failure of a system or component.--

Our research team combines technology with management to tackle the increasing challenges of integrity management by using several analytical models to calculate and analyse the reliability of these assets, some of which are:

- Qualitative models/approaches
- Quantitative models/approaches
- Semi-quantitative approaches/models
- Maintenance Optimisation

“WHAT WE DO”

**Risk Based Corrosion Integrity Management Methodology 10 Step Working Loop**

**Risk Assessment Matrix**

**Draft Bayesian Network Model Decision making tool for pipeline maintenance**

**Subsea Integrity Research Group**

**“Combining Technology with Management to Tackle Increasing Challenges of Subsea Integrity”**

**Subsea challenges**

Subsea platforms and equipment are being installed at 3000m+ below water level and are continuously subject to harsh attack from corrosive fluids. Subsea metallurgy is pushing the material limits creating the need to develop bespoke and ultra-resistant alloys.

Thus, making it highly comparable to the stringent requirements of space program, in terms of technological demands.

**Current research work by the team includes:**

- Pipeline Integrity Supporting Inspection Decisions under Aging. Robbie Williamson, Principal Integrity Engineer of the Wood Group Integrity Management, UK, EngD.
- Decision Making in the Maintenance of Subsea Pipelines. Fiddo Fiddo, PhD.
- Risk and Safety Implications of Corrosion Effects on Water, Oil and Gas Pipelines. Mark Ukelabchi Ideou, PhD.
- Ageing and Life Extension of Offshore Pressure Systems. Reza Sharhivar, Lloyd’s Register, PhD.
- Managing the Integrity & Reliability of Subsea Assets under High Temperature & High Pressure (HTHP) conditions. Innocent Fawwaz Fawwaz, Professor, University of Aberdeen.
- Safety, Risk and Mechanical Reliability Research for Oil and Gas Industry. Muhammad Asif Qureshi, will join the team in February 2012 for a PhD programme.
- Decision Making through Bayesian Network Modelling in Pipeline Maintenance. Mattia Gandolfi, ERASMUS exchange student from the University of Parma, Italy.
- Sameer Ashok Chappagou, MSc in Subsea Engineering, University of Aberdeen.
- Abhishek Mamgum, MSc in Subsea Engineering, University of Aberdeen.

**THE TEAM**

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- Mamgain Abhishek
- Sameer Chappagou
- Robbie Williamson

**压力缓解技术**

**压力缓解工作流程**

**压力缓解评估矩阵**

**管道维护决策模拟工具**

**设计由Fiddo Fiddo与group members共同完成**