

Integrity services

Asset integrity has never been more important. Loss of integrity can lead to loss of life, loss of production or total loss of the asset.

But by managing the integrity of your asset effectively, you can improve safety, maximise operability and increase the life expectancy of your asset. Unplanned and unbudgeted outages will be reduced and the cost of sustaining the integrity of your asset will be kept to a minimum.

Why manage the integrity of your asset?

Maximising the operating capacity of an asset is an important consideration throughout its life.

Introducing integrity principles as early as possible will bring the greatest rewards, however they can be applied successfully at any stage of an asset's life.

By incorporating factors that will influence integrity at the concept or design stage, the life of the asset can be extended beyond those built using more traditional methods.

For operating platforms, managing the integrity of your asset helps identify damage in the early stages, before it becomes a problem. Monitoring and mitigation measures are then developed and implemented so that maximum safe life is achieved. Where it is too late for prevention, fit for purpose analysis, integrity monitoring and corrosion management measures can help avoid premature repair or replacement and unplanned shutdowns. Any repair or maintenance work can then be scheduled to coincide with planned shutdowns.

In addition to maintaining the integrity of your asset, all of these activities can contribute to achieving life extension beyond original design life. The expected life of your asset may be increased by addressing threats to its integrity, including the major threats associated with:

- internal corrosion and erosion
- external corrosion
- fatigue life
- reservoir and process management
- cathodic protection systems

Our breadth and depth of industry experience means we can help you manage the integrity of your asset from conceptual design through to decommissioning. Techniques and activities will be carefully selected to help you successfully meet



your business, safety, environmental and integrity objectives.

POTENTIAL BENEFITS

- confidence in the safety of your asset
- improved plant availability and income
- enhanced return on investment
- working closely with you to help you meet your integrity and business objectives
- optimised inspection, mitigation and repair costs
- reduced system and equipment failures
- ability to safely extend operations beyond original design life
- a systematic, managed approach to repairs and replacements
- a documentary trail that helps demonstrate compliance with legislative requirements

OIL AND GAS
SERVICES

Lloyd's
Register



Our approach

Your operational and maintenance teams will be fully supported by our integrity engineers. They will work closely with you to achieve results that help you meet your integrity and business objectives.

Should you require a one-off corrosion study, a fully managed asset integrity services, or something in between, we have the solution for you. We welcome the opportunity to discuss any integrity issues you may have and will work with you to help you meet any integrity challenge.

You can benefit from our expertise in:

- pressure systems (static and rotating equipment)
- structures (fixed and floating)
- pipelines and subsea production systems
- lifting equipment
- wellhead control equipment
- safeguarding systems
- electrical and control systems

Our range of integrity services

We have a strong track record in delivering integrity services, including:

- developing and implementing integrity management systems
- inspection management, including:
 - risk based inspection studies
 - anomaly management and defect assessment
 - NDE and non-invasive inspection and consultancy
 - fabric maintenance support

- corrosion management and engineering, including:
 - degradation risk assessment and integrity reviews
 - corrosion under insulation
 - failure investigation
 - material selection studies
 - corrosion awareness training
- independent audit or review of integrity, inspection and corrosion management systems
- engineering consultancy services, including:
 - structural integrity assessment
 - linear and non-linear finite element analysis
 - pipeline freespan analysis
 - NDE and materials consultancy
 - mooring system detailed analysis
 - rotor dynamics and vibration analysis
 - lifting equipment assurance

www.lr.org

For further information please contact

Aberdeen

Ron Edgar
Lloyd's Register EMEA
Denburn House
25 Union Terrace
Aberdeen, AB10 1NN, UK
T +44 (0)1224 267509
F +44 (0)1224 267401
E ron.edgar@lr.org

Europe Middle East and Africa

Daryl Attwood
Lloyd's Register EMEA
T +44 (0)1224 267619
M +44 (0)7730 498390
E oilandgasemea@lr.org

Americas

Bill Westcott
Lloyd's Register Americas Inc.,
T +1 (1)281 675 3109
M +1 (1)713 443 5244
E oilandgasamericas@lr.org

Asia

Alastair Jones
Lloyd's Register Asia
T +65 (0)6891 7268
M +65 (0)9129 4011
E oilandgasasia@lr.org

Services are provided by members of the Lloyd's Register Group. Lloyd's Register, Lloyd's Register Asia and Lloyd's Register EMEA are exempt charities under the UK Charities Act 1993.

July 2006



LIFE MATTERS