Challenges of offshore ageing infrastructure and life extension
A Regulator perspective

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WHAT IS AGEING?

- Typical design life for production assets = 25 years.

- “The design life is the assumed period for which a structure or component is to be used for its intended purpose with anticipated maintenance but without substantial repair from ageing processes being necessary” ISO 1990

- Ageing is wider than just the integrity of the main structure
Key ageing issues

• Ageing/deterioration
  – External/internal corrosion
  – Structural degradation/failure (e.g. fatigue)
  – Backlogs of maintenance
  – Cumulative effect of modifications

• Changes in process conditions over time

• Obsolescence

• Loss of information capture/retention (IT + human!)

• Advances in knowledge/technology

• Improvements in good practise
The ageing/life extension conundrum....

[Diagram showing cash flow over time with revenue and cost (ops & maintenance) lines, and a probability of end of life indicated.]
Key Programme 4 (KP4)  
Offshore Ageing & Life Extension

“To ensure that the risks to asset integrity associated with ageing and life extension are controlled effectively.”

• Doing work now, for improved integrity management/safety in the future

• Inspect approaches to management of Ageing & Life Extension (ALE):
  – Is it a key element of the asset integrity management (AIM) system?
  – Is there senior management involvement?
  – Is it integrated into corporate safety culture?
  – Are long-term asset integrity plans developed?

• Seek industry recognition of the importance of ALE:
Overview of KP4 progress so far

• KP4 Interim Report published November 2012 (www.hse.gov.uk/offshore/ageing/kp4-interim-report.pdf)

• Industry has responded well
  • Ageing/life extension now firmly “on the map”
  • Good practices being captured by O&GUK

• Good senior management response:
  • Recognised as a business issue
  • ALE policies/procedures developed
  • KP4 task groups created
  • Some allocating personnel with specific ALE responsibilities.
  • KPI “dashboards” for ALE
Some key lessons

- ALE management works well when
  - Long term maintenance strategies are clear (all)
  - Performance trending of SCEs and other data is carried out (process safety/mechanical)
  - Go/No Go checks are insufficient!
  - Temporary repairs are replaced with permanent solutions (mechanical/pipelines)
  - Long term reliability of obsolete equipment (particularly for control/detection) is managed effectively.
KP4 good practices

• Greater emphasis on quality and monitoring of Operational Risk Assessments (ORAs) for degraded plant
• Auditing of defined life repairs
• Undertaking ALE gap analysis
• Obsolescence Reviews
• “Life of field” structural integrity condition assessments
• Extensive fabric maintenance – most visible!!
But............

- Existing work loads are very high, meaning taking time out to consider ALE issues is difficult.
- Fabric maintenance still a challenge, with widespread concerns over CUI.
- Need for better appreciation of ‘Ageing’ and planning for Life Extension, and day-to-day management - further integration into mainstream asset management
- ALE auditing/verification needs to be improved
- Work to implement industry good ALE practices
- ........and its not just a “Safety thing”
HSE Ageing and Life Extension information

www.hse.gov.uk/offshore/ageing.htm

• Primary source of information on ageing offshore installations on:
  – Related reports/findings
  – KP4 templates
  – Standards and technical guidance documents
  – R&D
  – Links to other relevant websites (e.g. O&GUK, PSA, EI)