HSE’s AGEING & LIFE EXTENSION KEY PROGRAMME (KP4)

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KP4 website: www.hse.gov.uk/offshore/ageing.htm
THE OFFSHORE INSTALLATIONS SAFETY CASE

• UKCS operates a Safety Case Regime
  – Literally “The Case for Safety”

• Recommendation from Lord Cullen's inquiry into the Piper Alpha Disaster (6th July 1988)

• Offshore Installations (Safety Case) Regulations 2005

• The offshore installation Duty Holder must submit a Safety Case to HSE for acceptance

• Aim is to reduce risks from major accident hazards to the health and safety of offshore workforce

• Safety Case is a demonstration the duty holder has the ability and means to control major accident risks effectively
WHAT ARE AGEING & LIFE EXTENSION?

AGEING

“Ageing is not about how old your equipment is; it’s about what you know about its condition, and how that’s changing over time”

Condition Management is the key

LIFE EXTENSION

• When assets exceed design life = Life Extension phase
• Half UKCS production platforms in LE phase
• Some platforms anticipate 50-70 years production (100 years on NCS)
• Plus 5-10 years to removal from sea bed

Across the European Union’s hazardous industries ageing is implicated in:

30% of incidents
28% of loss of containment
WHAT IS KP4?

- Raising awareness of consequences of ALE
- Understanding & forecasting degradation mechanisms & rates of Safety Critical Elements
- Obsolescence management
- Continuous health & safety improvement
- Reducing Hydrocarbon Releases
- Working with industry for a common goal
- Sharing ALE knowledge for the benefit of all
ALE MANAGEMENT WORKS WELL WHEN:

- Senior management are fully engaged and supportive
- Duty Holders have ALE focal points/ Life of Field Managers
- ALE/KPI dashboards
- Independent ALE audits
- Succession planning
- AIM workloads prioritised to risk
- ALE is embedded into AIM policies and procedures
Studies by Prof Jan Erik Vinnem (Preventor) for PSA Norway found:

- 60% of leaks due to human interventions:
  - Significant issues were:
    - Failure to check pre-work isolations, and
    - Failure to check isolations & integrity after re-instatement

- “It is not possible to demonstrate a correlation between leak frequency and the age of an installation”
  - other factors are more important

- “Technical degradation caused ~21% of HC leaks"
ALE MANAGEMENT WORKS WELL WHEN:

- Major Accident Hazard risks are identified
- Collective barriers to failure are identified
- HAZOPS/HAZIDS/QRAs aligned to 5 yearly Thorough Review Summary
- Performance trending of SCEs
- Integrity management of TRs
- Effective range of fire&gas detectors
- Audits of operational risk management systems are undertaken
- Long term planning
STRUCTURES

ALE MANAGEMENT WORKS WELL WHEN:

• Structural analyses are up to date and identify ALE risks
• Failure and deterioration models address both Ageing and Life Extension
• The risks associated with un-inspectable components are resolved
• Air gaps for the 10,000 year wave are re-assessed
MARINE

ALE MANAGEMENT WORKS WELL WHEN:

• Effective ALE policies for structural & marine integrity
• Up to date structural modelling
• Effective inspection & condition monitoring
• Five year Class Society inspections
• Long term planning for equipment replacement
• Quantitative rejection criteria for SCEs
• Long term data trend analyses to plan for future maintenance
MECHANICAL & CORROSION

ALE MANAGEMENT WORKS WELL WHEN:

• ALE is integrated into AIM
• Effective control of integrity & maintenance management
• ALE gap analyses
• Effective anomaly management tools
• ALE effects and consequences are understood
• Long term maintenance strategies
• Effective corrosion management strategies
• Equipment lists are up to date
• Audits on AIM systems
ALE MANAGEMENT WORKS WELL WHEN:

• Effective inspections
• Well planned maintenance
• Timely purchasing of spares
• Effective obsolescence management
• Failure trend analysis for future repair/replacement needs
ALE MANAGEMENT WORKS WELL WHEN:

• Effective risk-based Pipeline Integrity Management Systems
• ALE management is integrated into the AIM policies and procedures
• ALE issues of flexible risers are considered
• Cleaning and intelligent pig frequencies match KPIs
• IP frequencies are regularly reviewed to match degradation threats
KP4 CONCLUSIONS

- HSE has seen evidence the offshore industry is investing considerable time and money improving ALE management
- Forward planning / anticipating the challenges will reap rewards:
  - improved long term H&S performance
  - extended production
- Need to continue effort to cessation of production

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Workforce Involvement in ALE

• Risk Perception & Assessment
  – HSE still finding problems with Operational Risk Assessments (ORAs)
  – Failure to identify and address MAH risks, see ORA guidance rolled out by OGUK

• Risk Communication
  – Clear procedures that guide correct thought process, e.g. ORA default should be shut-down unless there are good reasons to continue operations
  – Feedback to ensure understanding, e.g. confirmation of a reading on a pressure gauge
Take home message

• Need to equip people at all levels of the organisation with the right skills to recognise and respond to risk
  – Hazard awareness, assessment & anticipation

• Need to understand and actively manage the factors that influence human performance, e.g. operating wrong valve, not following a procedure
  – Distractions, badly written procedures, poor communication, lack of feedback

• Need to develop a culture where ‘speaking up about concerns’ is managed appropriately
  – Acceptable for ‘bad news’ to travel up the line
Play your Part!

• Control
• Competence
• Co-operation
• Communication

Facilities & Equipment
- Design
- Maintenance
- Reliability
- Demand

People
- Fitness
- Competence
- Morale/Trust
- Perception
- Behaviour

Systems
- Hazard identification
- Risk assessment
- Management Commitment
- Procedures, Training
- Incident investigation
- Monitoring
- Change
- Learning

• Complacency
• Culture