Better Than New, Enhancing Subsea Reliability on Q204

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Introduction/History

• Original subsea equipment built 1996, started up 1998,
• Schiehallion and Loyal field produced around 400 million boe up to 2013
• Reliability concerns with Schiehallion Control system
• System expanded by daisy chaining distribution system
• Topside reliability masked issues subsea
The Starting Point....Design Goals

• Need to maintain backward compatibility – Keep supporting the old while providing the infrastructure to upgrade to new
• Future proof system through to 2045+
• More fault tolerant system
• Provide infrastructure for infill well program and future subsea tie backs (100 well system)
• Need to maintain backwards compatibility with existing installed base
Q204 Field Layout
Controls Distribution Assembly (CDA)

- 14 Deployed on Q204 allowing a clustered distribution
- Houses redundant Subsea Distribution Modules (SDM)
- Supports up to 6 SCMs
- Distributes electrical + hydraulic power, communications and chemicals
- Supports legacy and latest communications protocols
Controls Distribution Assembly (CDA)

• Allows for upgrade of SCMs to top entry connections, bypassing vulnerable SCMMB cables
• Allows for upgrade to latest communications technologies (DSL)
• Ability to remotely isolate electrical faults downstream of SDM (Low IR +SC) without the need for subsea intervention
• Ability to remotely isolate hydraulic leaks downstream of the SDM
• Houses Chemical injection metering valves
Where we are today

• 15 wells added to-date and in-fill wells to take this up to 22 sanctioned, with more under appraisal

• Alligin tie-back to Glen Lyon FPSO in build

• Universal SCM design achieved, common spare for all locations, 11 unique part numbers consolidated to 1

• SDMs removing the need for remote intervention in order to diagnose and isolate faults – Limited intervention required

• Aker Solutions Condition monitoring system pilot up and running (Sub Sense)
Where we are going in the future

- Continuing need to manage obsolescence – Commitments in place to upgrade from Aker Solutions iCON product to Vectus

- Sensor reliability becoming an issue with original legacy sensors. Introduction of MARS systems to mitigate production vulnerabilities
References & Acknowledgements

- Shell UK Limited
- Chrysaor Limited
- Siccar Point Energy Limited

- Aker Solutions
- OneSubsea