Brownfield Optimisation: Enabling Innovations and Technologies To Enhance Recovery

Subsea UK 12th February – Subsea Expo AECC Aberdeen

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Agenda

- Challenges and opportunities
- Upgrade of a GoM asset
- Conclusion
Challenges and opportunities
Since the initial licensing issued in 1964 the UKCS has developed over the years currently supporting approximately 350 fields still in production.
Recently recommendations within the final report ‘UKCS Maximising Recovery Review’ related to improvements to production facilities to address a decline in production efficiency and maximize the remaining resources which included:

- Extending the life for the existing infrastructure and facilities;

- Implementation of technologies to realize production improvements;

Limitations and ailments of ‘Older systems’:

- Obsolescence, reliability and functionality; problems associated with electronics
- Performance and Flexibility; older systems often providing low speed / proprietary protocols and interfaces
Assessing condition and performance opportunities

Extending the life, facilities or existing functionality of the subsea system may include any or all of the following:

- Communications performance; Environmental, Umbilical and existing communication equipment often define limitations to system upgrade
- Power capacity and quality; support for additional loads and potential impact on communications system upgrades
Subsea integration; system upgrades should address connectivity, performance and standardisation.
Upgrade of a GoM asset
GoM Project Overview

The Princess field began production in 2002; target well located in 1200m water in GoM;

The project was to support the extension of a subsea system with a new well implementing an in-well fibre monitoring system;

The FO interrogators for the in-well sensors were required to be mounted on the seabed and provided with power and data communications to the topside;

The existing production system powerline communications was unable to support the communication requirements for the new well
Subsea System Architecture

Existing EPU / communication system

XT with Dual SEM Subsea Control Module

Channel A

Channel B

EDU

~6km Umbilical

TPCU

Ethernet LAN

OCH [housing FO interrogators

In-well FO sensor line

SEM A

SEM B
Error free communications on subsea system:

- Evaluation of system characteristics using digital Modem with in-built diagnostics / configuration – able to provide 46 kbps link
- Use of remotely configurable line coupling
- Suitable power / communication filtering to minimise load effects on existing system
- Provided 200kbps error free channel concurrent with the existing subsea control system allowing a transparent link subsea to topside
The existing production system was initially unable to support innovative in-well fibre technology;

- Following extensive testing and evaluation using current Proserv technology a coexist solution was proposed which would house the optical equipment and provide a 46kbps co-exist transparent channel.

- Improved performance was achieved by implementing improved power/communication coupling 200kbps co-exist transparent channel

- The solution physically integrated into existing system architecture without existing equipment modification other than jumper reconfiguration;

- Additionally, equipment could readily be re-deployed / reused to provide standard interfaces for data or controls equipment
Conclusion
The UKCS has upwards of 12 to 24 billion boe that could be produced; Production in the UKCS has fallen 38% between 2010 and 2013 with 72% of this attributed to a drop in production efficiency;


Proserv field proven technology was used to facilitate the upgrade of an existing GoM control system so support innovative in-well fibre monitoring technology.

*Providing ‘enhanced recovery opportunities’*
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