



Santos

Fletcher Finucane Completions

DrillWell, Perth - 7th March 2013

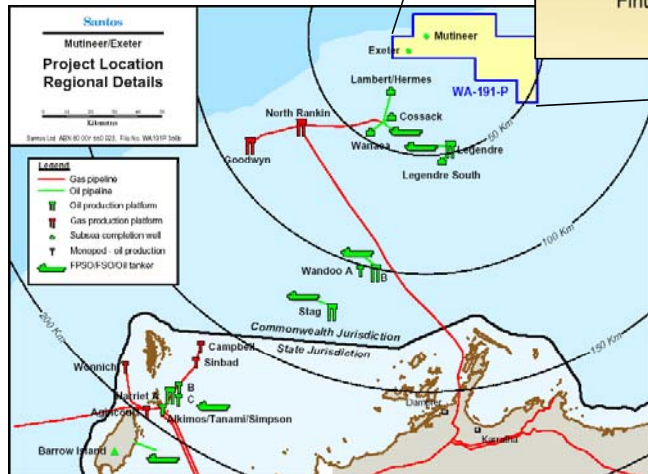
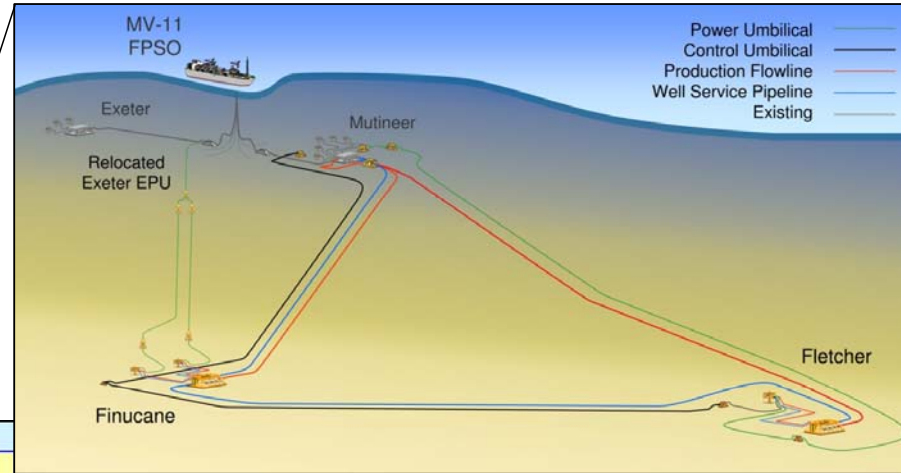
Agenda

- Finucane and Fletcher introduction
- Completion design
- Planning
- Challenges and Learnings
- Questions or comments



Finucane and Fletcher development

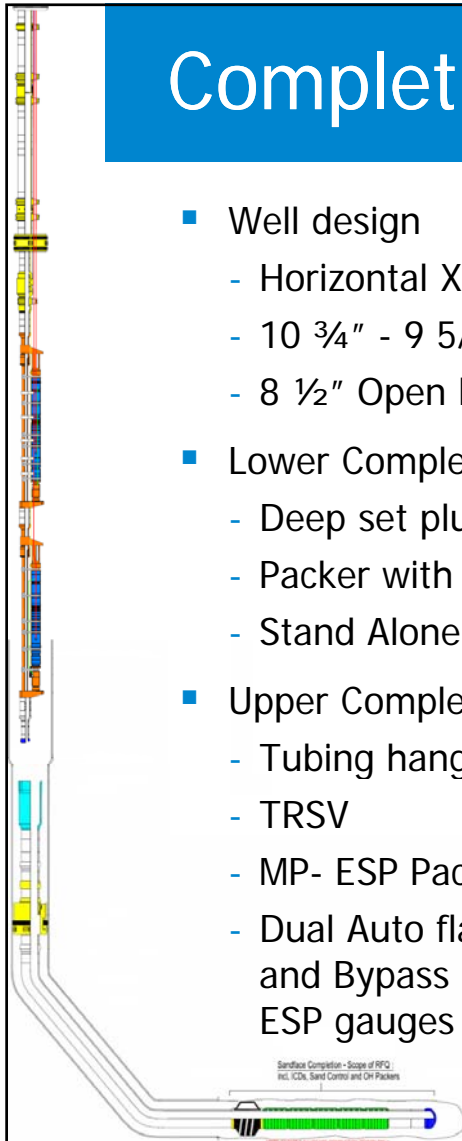
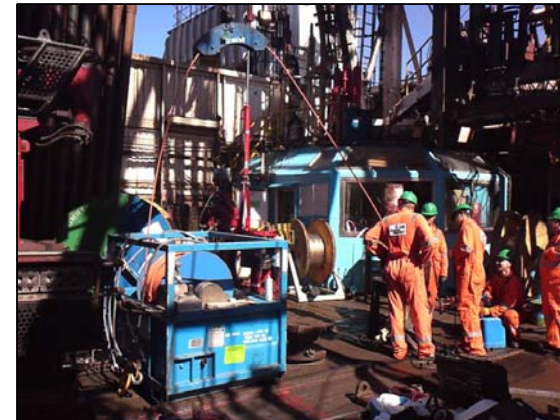
- Fletcher/Finucane are located
 - Lease WA-191-P
 - 20 km ENE of ME field
 - 160 km NNE of Karratha
 - 150-160m water
 - Shallow water SS required
 - 45 mins helo flying time.
 - 8 hrs one way vessel transit
 - Oil reservoir - Low GOR



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Completion design

- Well design
 - Horizontal XT
 - 10 3/4" - 9 5/8" casing
 - 8 1/2" Open hole section
- Lower Completion
 - Deep set plug capabilities
 - Packer with millout extension
 - Stand Alone Sand screens
- Upper Completion
 - Tubing hanger
 - TRSV
 - MP- ESP Packer (Hydraulic set)
 - Dual Auto flapper Y-tool with ESP and Bypass tubing and Saddle with ESP gauges

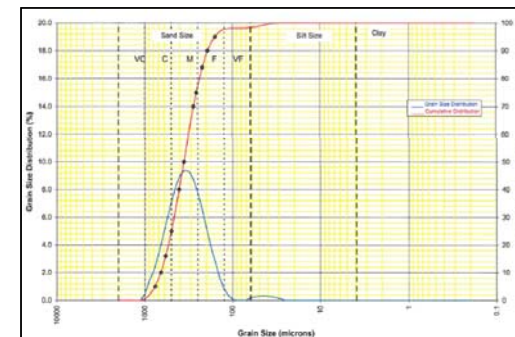


Saniflow Completion - Scope of RFQ
 incl. ICN, Sand Control and OH Packers

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Planning - Lower Completion

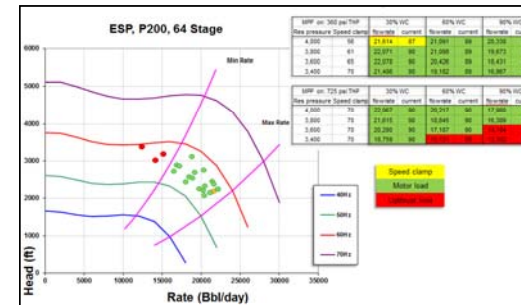
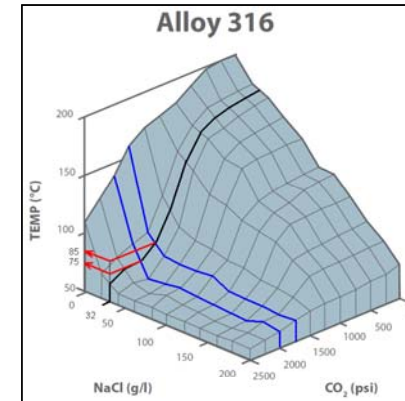
- Sand face design
 - Return Permeability test
 - Sieve and Laser sand particle sand distribution
 - Sand retention test
 - Flow Through test
- Swell packer compatibility analysis and testing
- Inline Casing scrappers
- Centralizers
- Engaging the drilling and subsurface teams for:
 - Well trajectory
 - Mud compatibility (filtering, well conditioning)
 - Wiper trip
- Optimum ICD configuration



Planning - Upper Completion



- Rotary union
- New VAM Obsolete
- Engaged drilling and subsurface teams for:
 - Well trajectory
 - ESP Sizing
- PCN replaced by Landing nipple profile
- Clear run connections on 5 1/2" tubing
- Metallurgy compatibility analysis
- WBCU Strategy
- MLE Sheaves



Planning - Project in general

- Batching on Finucane South
 - Aimed at the BOP pulling/running
 - Saved 4 days of operations
- Limited deck space
 - Crowded deck
 - Strong logistics coordination
 - 3rd supply boat
- Limited POB



Challenges and Learnings

- Debris in intermediate completion in Fletcher 5
 - Glass plug as a barrier for FS2 and 3
 - WBCU Strategy optimized (larger bore) - Jet BOP
- Reservoir behavior not as expected
 - Changed to ICDs strategy
- Slug pill - Screens plugged
 - Replaced screens and Mud re-conditioning
- Suspension Packer Setting difficulties
 - Review procedures and recommendations



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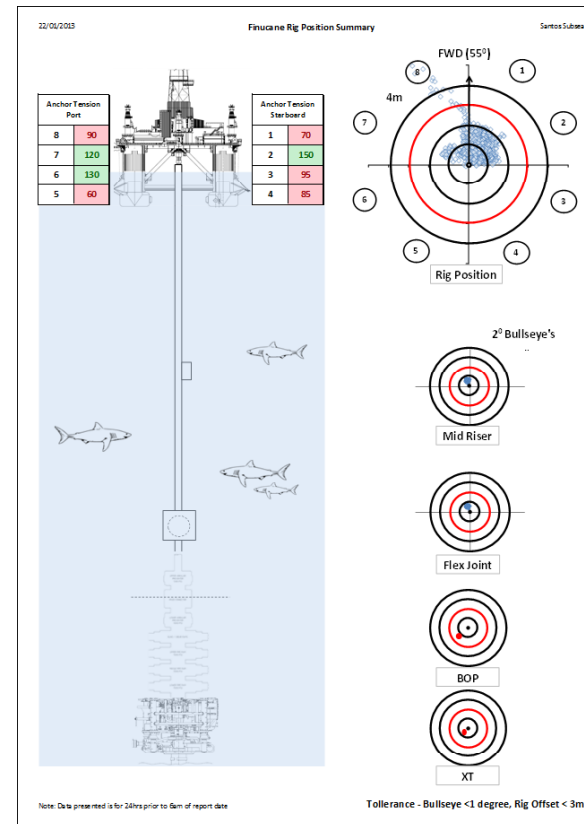
Challenges and Learnings

- Loss of TRSV and CI line integrity
 - Line make up procedure review + SIT
- Cable damage
 - Adjusted completion orientation
- Packer damaged
 - Riser and rig movement monitoring
- ESP Pressure spikes detected
 - SSD RIH opened
 - LLSA testing procedure moved to after landing
 - XT, C&K lines opened for landing TH



Challenges and Learnings

- Increased Monitoring
 - Live and accurate rig position
 - Digital bullseye's
 - Mid Riser
 - Flex Joint
 - Frequent automated logging
 - Data interpretation and reporting
- Review of historical data to predict future conditions
 - Anchor Tensions
- Successful Completion run



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Questions

