

Greater Enfield Project - Innovation and technology enables long subsea tie-back

PERTH CONVENTION AND EXHIBITION CENTRE

AOG Presentation

13th March, 2019



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This presentation contains forward looking statements that are subject to risk factors associated with oil and gas businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

All references to dollars, cents or \$ in this presentation are to US currency, unless otherwise stated.

References to "Woodside" may be references to Woodside Petroleum Ltd. or its applicable subsidiaries.

Notes on Petroleum Resource Estimates

Unless otherwise stated, all petroleum resource estimates are quoted as at the balance date (i.e. 31 December) of the Reserves Statement in Woodside's most recent Annual Report released to ASX and available at <http://www.woodside.com.au/Investors-Media/Announcements>, net Woodside share at standard oilfield conditions of 14.696 psi (101.325 kPa) and 60 degrees Fahrenheit (15.56 deg Celsius). Woodside is not aware of any new information or data that materially affects the information included in the Reserves Statement. All the material assumptions and technical parameters underpinning the estimates in the Reserves Statement continue to apply and have not materially changed.

Woodside reports reserves net of the fuel and flare required for production, processing and transportation up to a reference point. For offshore oil projects and floating LNG (FLNG) projects, the reference point is defined as the outlet of the floating production storage and offloading (FPSO) or FLNG facility, while for the onshore gas projects the reference point is defined as the inlet to the downstream (onshore) processing facility.

Woodside uses both deterministic and probabilistic methods for estimation of petroleum resources at the field and project levels. Unless otherwise stated, all petroleum estimates reported at the company or region level are aggregated by arithmetic summation by category. Note that the aggregated Proved level may be a very conservative estimate due to the portfolio effects of arithmetic summation.

'MMboe' means millions (10^6) of barrels of oil equivalent. Dry gas volumes, defined as 'C4 minus' hydrocarbon components and non-hydrocarbon volumes that are present in sales product, are converted to oil equivalent volumes via a constant conversion factor, which for Woodside is 5.7 Bcf of dry gas per 1 MMboe. Volumes of oil and condensate, defined as 'C5 plus' petroleum components, are converted from MMbbl to MMboe on a 1:1 ratio.

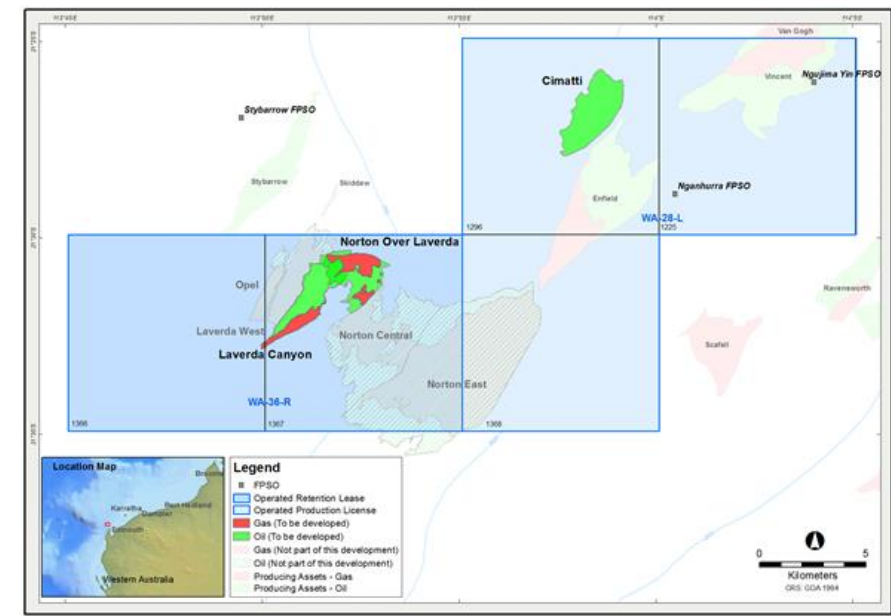
Unless otherwise stated all petroleum resource estimates refer to those estimates set out in the Reserves Statement in Woodside's most recent Annual Report released to ASX and available at <http://www.woodside.com.au/Investors-Media/Announcements>. Woodside is not aware of any new information or data that materially affects the information included in the Annual Report. All the material assumptions and technical parameters underpinning the estimates in the Annual Report continue to apply and have not materially changed.

The estimates of petroleum resources are based on and fairly represent information and supporting documentation prepared by qualified petroleum reserves and resources evaluators. The estimates have been approved by Mr Ian F. Sylvester, Woodside's Vice President Reservoir Management, who is a full-time employee of the company and a member of the Society of Petroleum Engineers. Mr Sylvester's qualifications include a Master of Engineering (Petroleum Engineering) from Imperial College, University of London, England, and more than 20 years of relevant experience.



Development Overview

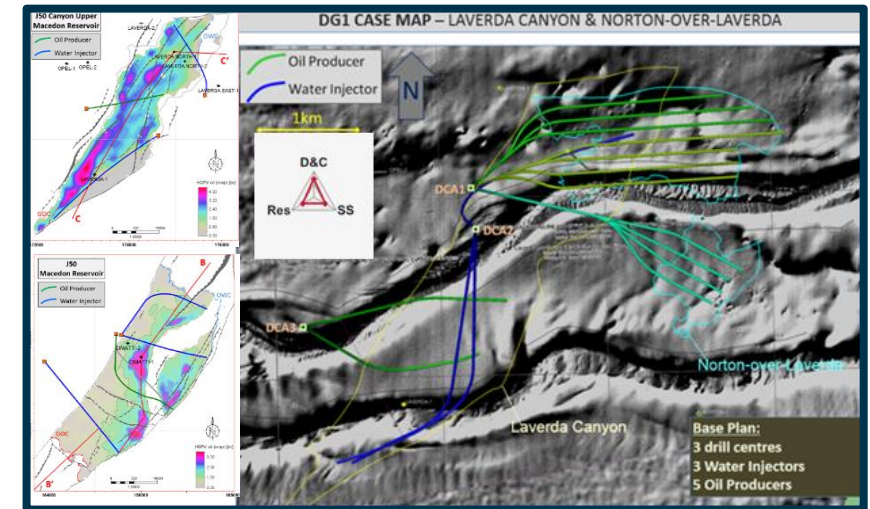
- + Development of oil from two fields Laverda (WA-59-L) and Cimatti (WA-28-L).
- + Multiple previous attempts to find economic development concepts.



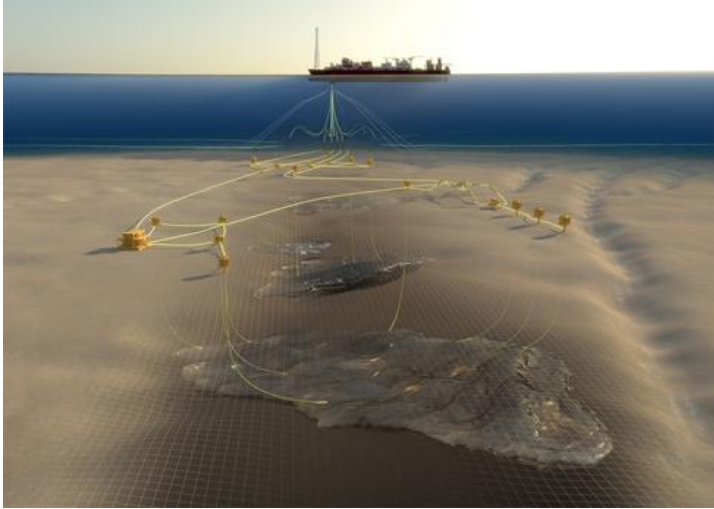
Development Location

Key Development enablers included:

- Maximise use of existing infrastructure;
- Risked based Hydrate Management;
- Risk balanced Field Layout: distribute risk across disciplines;
- Willingness to adopt new technology.



Subsea System Overview



Greater Enfield Project – Field Layout

Oil Production: 6 wells, Flexible Flowlines, Subsea MPPs + 30 km HV power supply, 30 km rigid carbon steel production flowline.

Water Injection: 6 wells, 27 km rigid water injection flowline, flexible canyon crossing, flexible flowlines.

Gas injection: 10 km flexible gas injection flowline.

Controls: Subsea Controls and Umbilicals

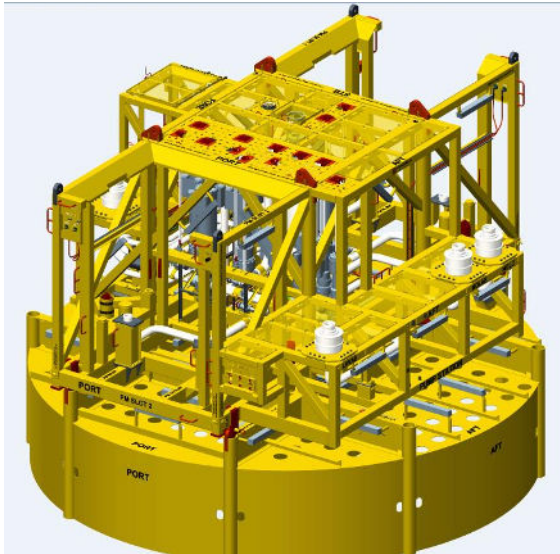
Innovations and Technology Enablers

- + High Boost Multiphase Pumps
- + Carbon Steel Flowline



High boost Subsea MPPs

- + Technology selection
- + Technology qualification
- + Late change to HV motors + Swivel uprating
- + Flow assurance challenges



High boost Subsea MPPs

- Dual Pump Station with 2 x 2.6 MW pump modules
- Mudmat foundation structure
- Topside Power and Control Module (PCM)
- MPP Power and Control Umbilical (~30 km)



Technology Assessment

Sept 2014 ↓

Statement of Endorsement

Feb 2015 ↓

Statement of Release

Dec 2015 ↓

Technology Assessment 10kV MPP Motor

Apr 2016 ↓

Successful Qual. of HV motor

July 2016 ↓

Statement of Release HV motor

Aug 2016 ↓

MPP SYSTEM QUALIFICATION TIMELINE – GREATER ENFIELD



Carbon Steel Production Pipeline

- + CS multiphase production flowline - a "first" for Woodside.
- + Choice of Carbon Steel driven by:
 CAPEX versus Corrosion Risk Management / OPEX:
- + Corrosion Management Plan called for ...
 - Continuous Corrosion Inhibition (*at MPP Station*)
 - Batch biocide (*at XTs*)
 - 2 x Corrosion Monitoring Spools (to monitor Corrosion Management)
 - Subsea-to-Subsea inspection pigging in service

Subsea to Subsea Pigging

Intelligent pigging in service :

- to verify Integrity;
- to support the Pipeline Licence;

But ...

- limited experience in gas systems;
- lack of industry experience for oil production systems;
- --> onshore testing.
- --> Baseline Survey and offshore "prototype" run

Subsea-to-Subsea Pigging: Prototype Test / Baseline Survey

Pigged using water prior to start up:

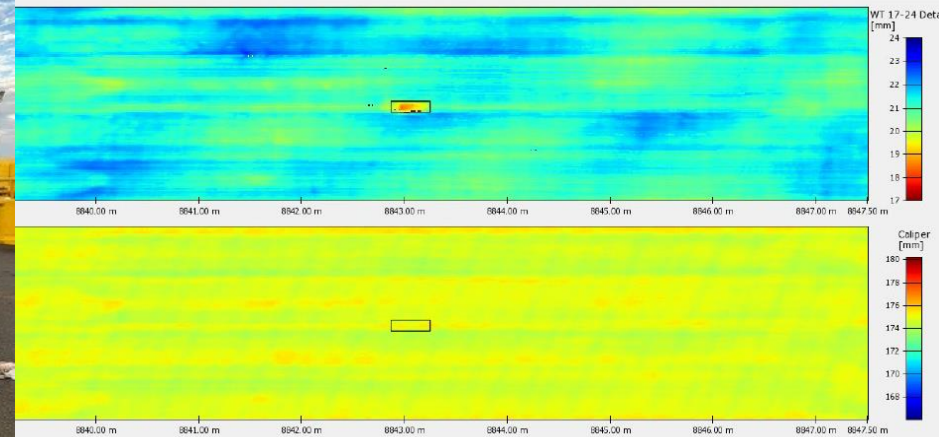
- Prove the pigging tool is suitable;
- Get baseline wall thickness data;
- Prove the SSPLRs and procedures;
- Iron out any issues.



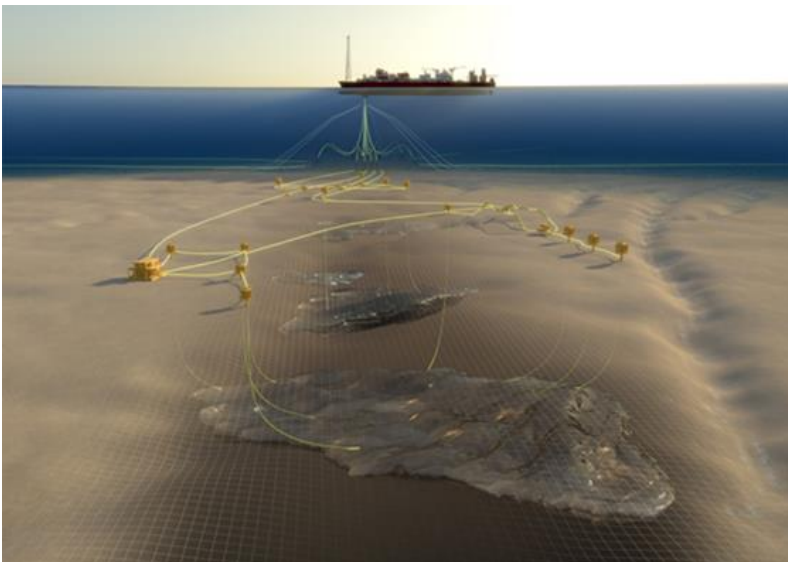
Pig Launcher



Pig Receiver



Pipeline Wall Thickness Data



Greater Enfield Project – Field Layout

Conclusions

- Willingness to adopt new Technology.
- Robust Technology Qualification Process.
- Robust Risk Identification and Management.
- Competent Contractors.



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