



Society of Petroleum Engineers



Gas Field Development and Production – State of Play

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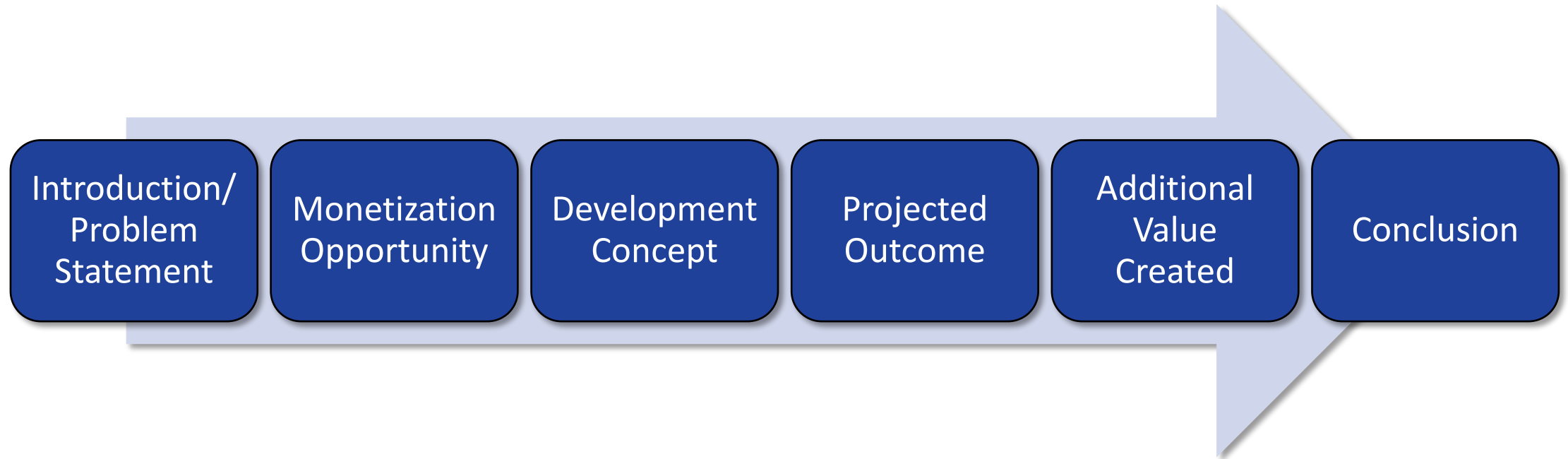
Securing Long-term Gas Delivery Through Maximizing Potential and Extending Production Life of Gas Hub by Brownfield Facility Modification: Case study from Sarawak Gas Field

Sarran Raaj Kunasekaran

Petronas Carigali Sdn Bhd



Flow of Presentation



Introduction/Problem Statement



Alpha Hub is a gas collection hub that has been operating since 1982. Equipments/Facility was designed as per original expected rates



Currently there are 2 fields evacuated through this hub, 1 clastic and 1 carbonate field



Operating pressures are beginning to approach lower limit of equipment



Forecast shows that production will be below field turn down rate (TDR) in 2028 while PSC expires in 2030



Opportunities need to be identified to maximize PSC value

Monetization Opportunity

The team did a study on hub equipment and identified 2 equipments that would have the most impact on production



Replacement of Gas Booster Compressor

- ✓ *Allows for reduction of suction pressure to increase field production without sacrificing capacity*



Replacement of Condensate Booster pump

- ✓ *To ensure pump can be operate within new operating pressure*

Value Creation



Maximizing Production, increasing RF



Extending Hub life above TDR



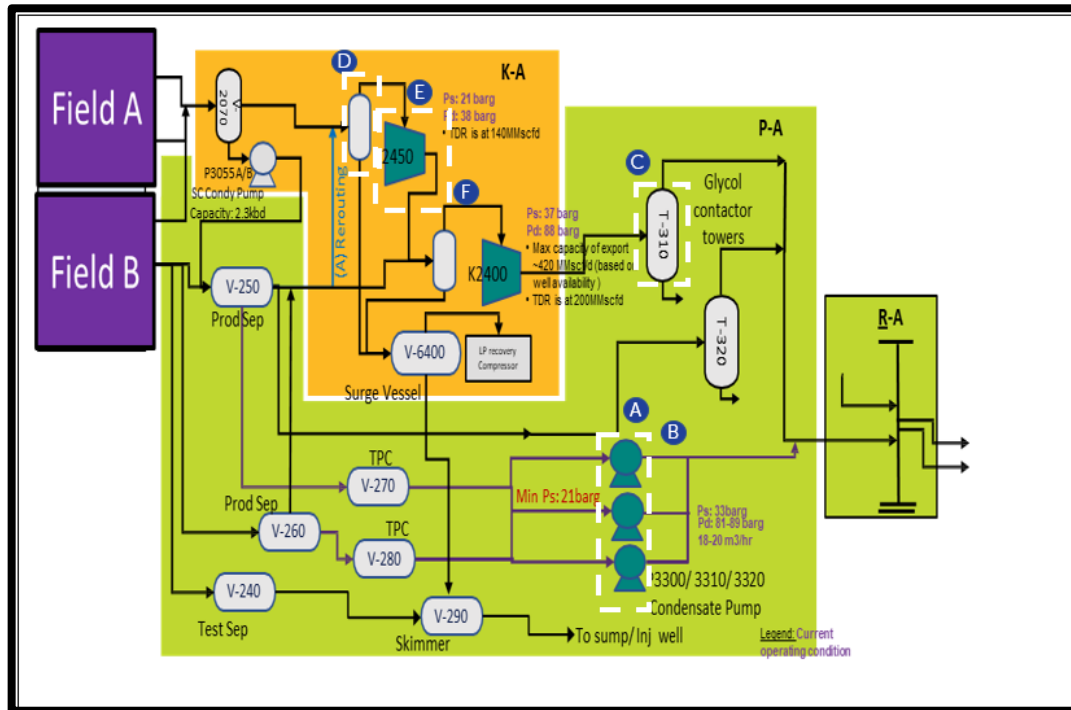
Improving Capacity at lower compressor suction pressures



Ullage availability at Hub for future projects to tie-in

Development Concept

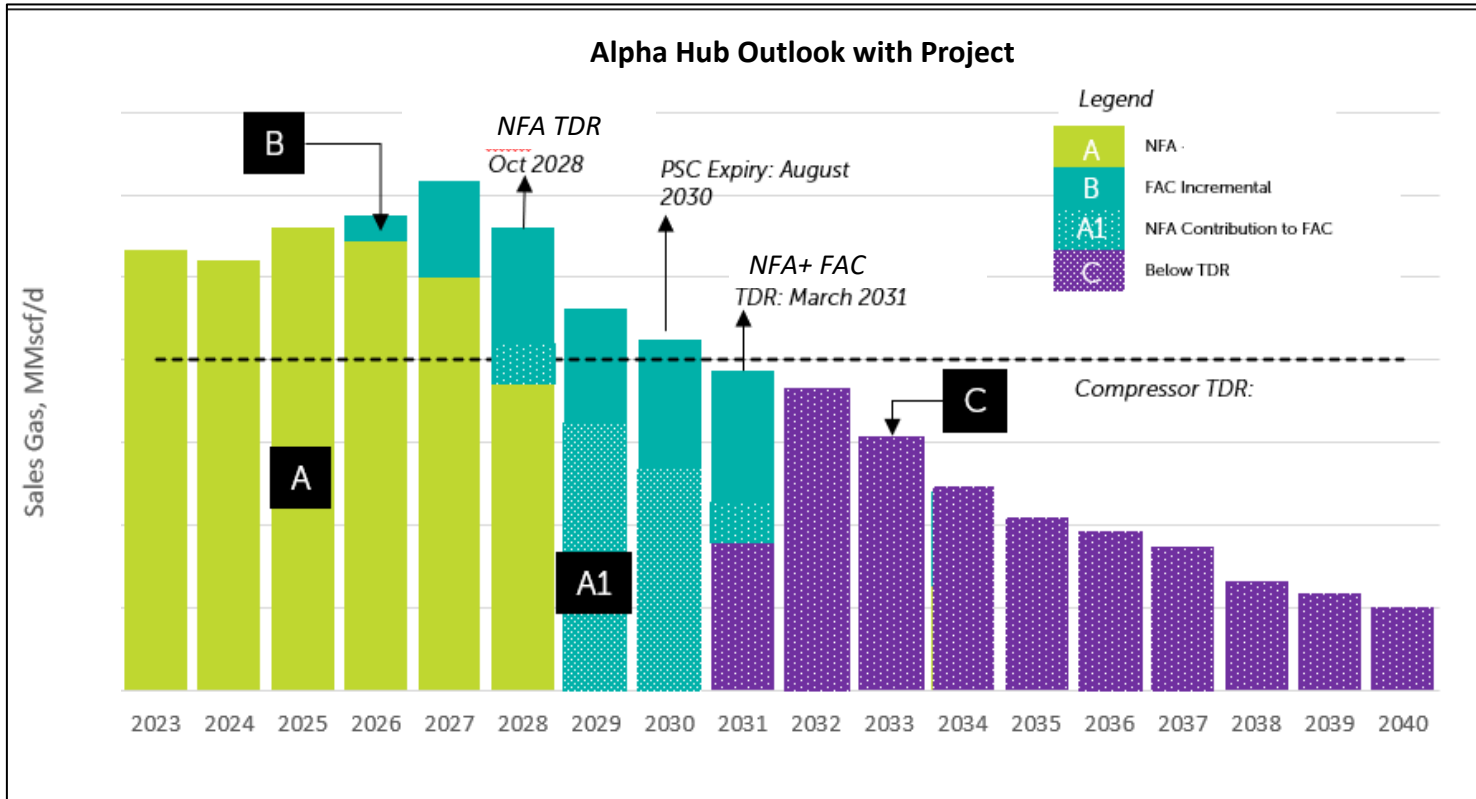
A subsequent detailed adequacy check, and equipment limits check was conducted and scope was detailed out. The scope is based on further reduction of suction pressure ($P_{suction}$) by **57%**:



- A** Replace Condensate Pump (From Centrifugal to Reciprocating Type)
- B** Replace Condensate Pumps Discharge Control Valve
- C** Increase of TEG concentration to 99wt% from 98wt%
- D** Replace Suction Scrubber (with removal of existing scrubber & install temporary deck extension)
- E** Replace New SC /Booster Compressor & Gas Turbine) with removal of existing unit.
- F** Replace Antisurge Recycle Valves & line on SC Compressor

Projected Outcome

The facility modification realizes volumetric gains from **multiple angles**.



Incremental production from Field A from lowering compressor suction pressure **(B)**



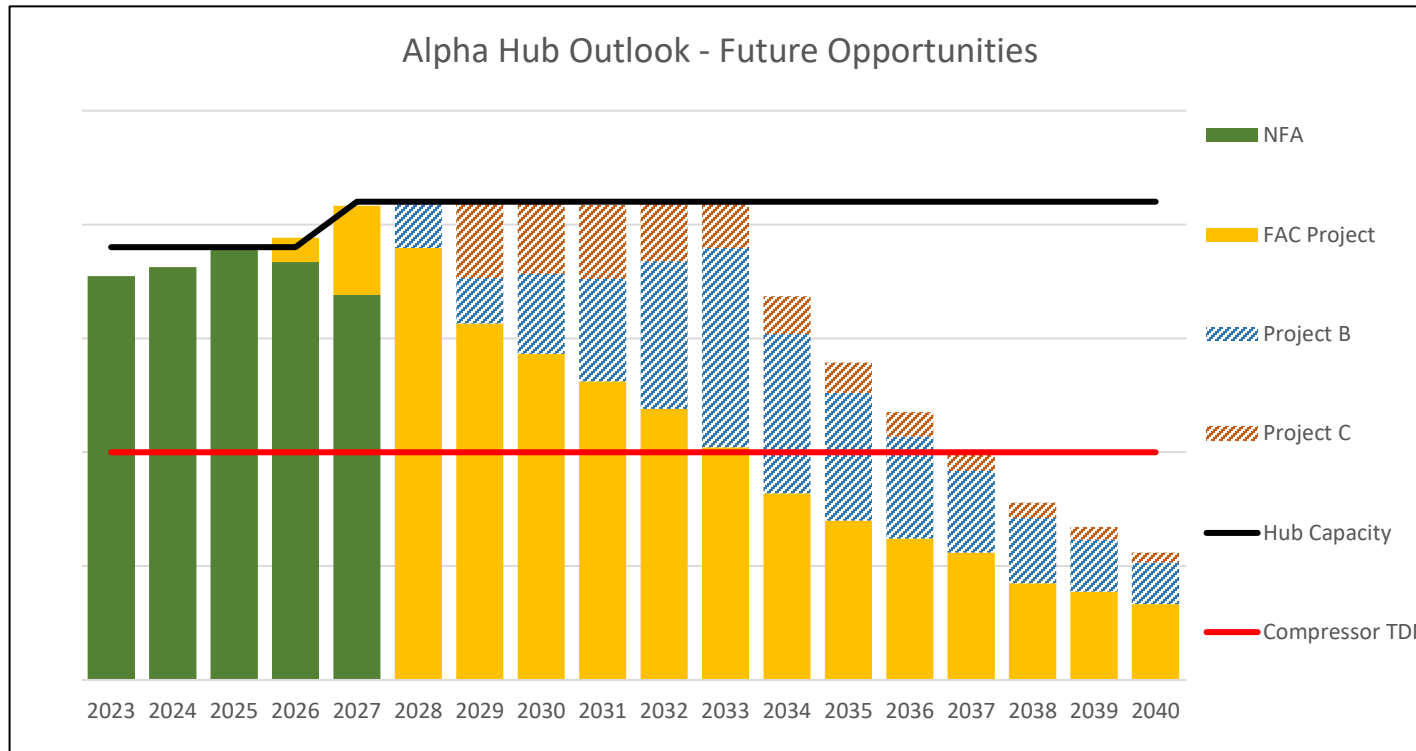
Incremental production from Field B from lowering compressor suction pressure **(B)**



Monetization of 'below-TDR' NFA production from both fields due to TDR timeline extension **(A1)**

Additional Value Created

On top of additional production, the facility modification creates significant impact that puts operator in a stronger position for PSC negotiation as well as unlocking future growth strategy opportunities



Extending the timeline for TDR beyond PSC expiry allows stronger justification for operator's PSC extension negotiation



Increasing capacity of the hub **creates ullage for future fields to tie in**, reducing their evacuation costs and overall project costs hence **improving project economics**



Modification and replacement of equipment will improve equipment reliability which increases facility uptime

Conclusion/Lessons Learnt

- The brownfield facility modification was identified as the best way forward as it results in the biggest impact.
- The modification increases production, improves recovery factor and contributes significantly to our hub protection and growth strategy
- Detailed adequacy check and capacity check is crucial
- Continuous alignment of basis and assumptions between subsurface and front-end team is important to ensure forecasting is done with same understanding

Acknowledgement

Pn. Norhayati Sahid

Project Team Members

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