Fully Integrated Field Development Optimisation for Chevron’s Australia’s Gas Development Opportunities

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Chevron Australia – Key Business Needs

- Competitive Development for Higher Returns – Costs, Cycle Time, Technologies
- Tens of Billions of Capital Required for Additional Developments – Capital Efficiency is Critical
- Key Focus is on Lower Carbon Development Alternatives

![Schematic Profiles](image)

- **Wheatstone**
- **Jansz-lo**
- **Gorgon**

*Existing Fields Base Decline*
*Additional Developments Tier 1*
*Additional Developments Tier 2*
The Triple Crown partnership is leveraging a unique opportunity for 3 global organizations to work together in accelerating development of cloud-native solutions and creating vastly improved, digitally enabled petro-technical workflows.

Chevron Australia Triple Crown Roadmap

- **2020**
  - Derby

- **2021**
  - PTS Migration & Steady State
  - Preakness

- **2022**
  - FD Plan + DrillPlan / DrillOps
  - Belmont

- **2023**
  - AI / ML Tools (micro-services)
Digital Capabilities Required for Field Development Optimization

• Automation
  – End-to-end workflow
  – Significant reduction in concept generation and comparison cycle time
  – New data incorporated into scenario evaluation for rapid understanding of impact and value trade-offs
  – Automated knowledge management

• Integration, Compute and Data
  – Data architecture supports integration of significant and diverse data sets
  – Rapidly model significant number of development concept alternatives
  – Connect with dynamic data from operations
  – Quick access to high quality data

• UI/UX
  – Intuitive user interface that improves clarity of alternatives for decisions
  – Tools that end users help create and want to use!
Field Development Planning Timeline

- **Sept 2019**
  - Triple Crown Agreement
  - Combining Deep Domain and Digital Knowledge and Capabilities

- **March 2021**
  - Enabling Integration Components for FD
  - Ensure Platform Architecture Enables MVP for Enterprise Scale

- **August 2021**
  - Gap Analysis for Chevron Australia with Schlumberger Perth
  - Determine Critical Components for Business for MVP

- **March 2022**
  - Alignment Workshop for MVP Alignment - CVX-SLB-MSFT
  - Final Alignment of MVP and Ensure Appropriate Triple Crown Resources

- **August 2022**
  - Delfi PTS Adopted by Chevron Australia
  - Deployment to Chevron Australia with Support from Triple Crown Partners

- **Nov 2022**
  - MVP for Chevron Australia
  - Delfi Petro-Technical Suite Adoption by Chevron Australia

- **2023**
  - Enhance and Deploy for Other Business Units
  - Increase Business Impact Across Enterprise
• End-to-end workflow helps determine possible value paths to test for field development
• Concepts leverage models (subsurface & network), production forecasts, well alternatives and subsea equipment needs for a range of possible cost and schedule alternatives with economic determinations
Scenario Management

Manager

View
Concept Results*

SUMMARY DECISION/SCENARIOS

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<th>Value</th>
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<tr>
<td>Well count</td>
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<td>Number of Manifolds</td>
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SUMMARY OUTPUTS

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<td>CO2 Max Rate</td>
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</table>

WELL PRODUCTION PROFILE

- Sum (GIP) / (10^3)'s / (Time) / 365.25
- Sum (GIPcalced) / (10^6)'s / time

Schematic Data

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*Schematic Data
Estimated Value for Chevron

**Direct Value**

- Cost Saving $>10MM per year for Chevron Australia and greater for the Enterprise
  - Reduction in unnecessary manual efforts
  - Reduction in turnaround times for scenario modelling

**Indirect Value**

- Enabling the use of data across the value chain
- Setting thresholds on business risk and maximising value by right timing
- Enhances our understanding of the Value Chain to generate new insights
- Reduce cycle time moving from "what if" scenarios to fully informed decision making
- Provide data to inform field development and product supply teams on highest value opportunities
- Effectively assign resources to minimise the risk of negative outcomes
- Balance risk with opportunities for the portfolio under various gas supply alternatives
- Focus on critical risks for mitigation
- Breaking down silos in favour of collaborative ways of working

**Data as an asset**

**Better decision making**

**Digital machines (AI)**
Insights and Where to Next?

• Collaboration
  – The team (CVX-MSFT-SLB) are located in at least 4 different time zones across the globe
  – Project acceleration occurred after the post-COVID March 2022 workshop whereby in-person collaboration enabled quick alignment on priorities and a delivery path

• Remaining Risks
  – Actual costs and ability of running the end to end workflow in production – data and compute
  – Continuing time zone pressures – late nights, early mornings
  – Deployment - change management
  – Updates and scaling for other Chevron Business Units

• Post Chevron Australia Deployment
  – Automated knowledge management – adapt Explore Plan knowledge board for FD Plan
  – Refinement of E2E workflow for improved cycle time reduction and significantly more cases
  – Portfolio level optimisation – multiple fields and value chain incorporation