Black Swan Overview

NEBC liquids-rich Montney

Well funded, private equity backed
- Azimuth Capital Management
- CPPIB
- Warburg Pincus
## North Montney: Scale, Growth, Value

| High Quality Asset | • Returns: 35% full-cycle & 80% half-cycle at $2.50/GJ AECO<sup>1</sup>  
• Average 9 Bcf EUR last 49 Hz Upper Montney wells  
• 2017 well costs $4.7 MM D&C  
• Liquids yield 30-50 bbl/MMcf |
| ------------------- | --- |
| Material Scalable Position | • 341 net sections of Montney rights<sup>2</sup> (100% working interest)  
• 71 Hz wells drilled by YE 2017  
• Inventory of over 2,500 Hz locations |
| Growth Supported by Egress | • Development plan achieves 100,000 boe/d in 5 years  
• Gas egress commitments growing to >390 MMcf/d  
• Contracts held on three major pipeline systems |
| Infrastructure Advantage | • Owned & operated infrastructure  
• Operating cost <$2.50/boe through operated gas plant  
• Flexible pace of development |
| Strong Balance Sheet | • $850 MM equity raised to date<sup>3</sup>  
• $250 MM syndicated bank line<sup>4</sup> ($200 MM undrawn)  
• US$100 MM term debt<sup>5</sup> |

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1. EUR 9.0 Bcf, US$50/bbl WTI, C$1.25/US$ FX, $0.30/GJ Station 2 differential, $5 MM DCET  
2. 312 net DSUs where one DSU = 700 acres  
3. $800 MM drawn, $50 MM undrawn at Sept 30, 2017  
4. Includes a $50 MM accordion for additional syndicate participation; $49 MM drawn at Sept 30, 2017  
5. US dollar denominated, matures Jan 2024, 9% coupon
Building Momentum with Scale Exiting 2017

Corporate production
- Dec 2016: 16,650 boe/d (16% liquids)
- Q3 2017: 17,800 boe/d (20% liquids)
- Q4 2017E: 24,000 – 26,000 boe/d (20% liquids)

Reserves growth
- Significant increases in both 1P and 2P reserves Y/Y
- 2016 YE: 2P 478 MMboe; 1P 171 MMboe
- 2016 FD&A (incl. FDC)2:
  - PDP: $5.86/boe
  - 1P: $7.63/boe
  - 2P: $5.78/boe

1. Evaluated by GLJ Petroleum Consultants
2. Capital costs include the cost of the North Aitken Creek Gas Plant & land & changes in Future Development Capital (FDC)
Robust Economics: Low Cost, Liquids-Rich, Hot Gas

Black Swan Montney Half Cycle Economics

Black Swan Montney Full Cycle Economics

Revenue Enhanced by Liquids
Half-cycle Revenue Mix at 40 bbl/MMcf

Assumptions

1. Inputs provided in the Appendix
2. Black Swan chokes wells during initial production for operational reasons, no material impact on cumulative 365 day production
3. Netback over the first year, assumes Station 2 delivery
4. At $2.50/GJ AECO, US$50/bbl WTI, C$1.25/US$ FX and -$0.30/GJ Station 2 diff; liquids yield is 20 bbl C5+ and 20 bbl C3/C4
Repeatable Well Deliverability at Low Cost

**Upper Montney Wells (by completion date)**

- **Ongoing operational success**
  - Avg EUR: 9.0 Bcf since 2012 (49 wells)\(^1\)
  - Repeatable and predictable outcomes

- **Driving lower costs**
  - Continuous rig program
  - Ongoing optimization
  - Pad drilling
  - Frac water infrastructure
  - Timing of completions

- **Evolving wellbore design**
  - Testing well length, proppant loading, stage count and inter-well spacing to optimize economics:
    - Sand loading increased by up to 30%
    - Completed length increased by up to 50%
    - Increased service costs (fracturing)

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1. Well results are not normalized for completions
2. 2017 costs includes $0.5 MM for cost increases on design evolution; base design includes 1,800 m lateral, 30 stages, 60 T/frac
### Pad Operations Support Capital Efficient Growth

**Upper Montney Pad Performance Tracking Type Curves**

![Plot Legend](image1.png)

<table>
<thead>
<tr>
<th>Pad</th>
<th>Year Completed</th>
<th>Wells/Pad</th>
<th>Avg D&amp;C ($MM)</th>
<th>Avg EUR (Bcf)</th>
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<tr>
<td>2-C</td>
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<td>6</td>
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<td>19-E</td>
<td>2015/16</td>
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- Best pad at 22-C paid out in under a year
- Recent pads meet or exceed type curve
- Drilling efficiency³
  - Add 17,500 boe/d/rig annually
  - F&D cost <$3/boe
  - Capital efficiency <$6,000/boe/d

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1. Pads include one Lower Montney pilot well not included in the average EUR
2. Avg cost for two 2016 wells, 2015 well cost $9 MM D&C
3. Based on IP 365 of 875 boe/d (half-cycle 9.0 Bcf EUR type curve, $5 MM DCET)
Owned and Operated Infrastructure: Flexible Pace of Growth

100% Owned & operated infrastructure

Plant 1: 110 MMcf/d North Aitken Creek Gas Plant
- Phase 1: 50 MMcf/d (Q1 2016)
- Phase 2: 60 MMcf/d (Q2 2017)\(^1\)
- Liquids recoveries capable of ~40 bbl/MMcf (>50% C5+)

Plant 2: 198 MMcf/d facility
- Engineering in progress
- Long lead equipment included in 2017 budget
- Phase A on-stream timing to match pipeline expansions

Infrastructure investment
- At 2016 YE: $220 MM
- 2017 Budget: $92 MM

Pipeline infrastructure in place to support growth
- 35 km of gathering lines
- 20 km of raw gas lines (to third party facilities)
- 10 km sales gas line (gas plant to T-North)

\(^1\) Full capacity reached Nov 2017
Owned and Operated Infrastructure: Superior Netback

**North Aitken Creek Gas Plant Production**
- Production shut-in to facilitate offsetting completions of new pads
- Downtime for expansion and turnaround

**Oct/17 capacity: 85 MMcf/d (16,000 boe/d)**
- Final compression on-stream November 2017
- Initial condensate/C5+ up to 40 bbl/MMcf
  - Stabilizes at >20 bbl/MMcf after one year
- Plant optimized to maximize netbacks:
  - C3/C4 yield: 10-20 bbl/MMcf
  - Gas heat content: 1,150-1,170 MMbtu/mcf

**Top tier operating costs**
- Opex trending <$2.50/boe in 2017
- Liquids yields enhance revenues
- Plant operating netbacks >$16.50/boe
- Produced water recycled

1. Based on annual pricing of $2.29/GJ AECO, -$0.43/GJ Station 2 to AECO differential, US$50/bbl WTI and $1.30 C$/US$
Capital Program Drives Transition to Low Cost Structure

2017 production at record rates

• Production of 17,800 boe/d in Q3
• North Aitken Phase 2 commissioned in June, ahead of schedule
• Annual maintenance period was utilized to commission Phase 2 and to conduct completions that offset existing pads

Production outlook

• Production to exceed 25,000 boe/d in Q4 with installation of final inlet compressor

Cost structure

• Operating and corporate costs per boe trending lower with increased volumes through Black Swan facilities

1. Based on annual production of ~18,000 boe/d at $2.29/GJ AECO, -$0.43/GJ Station 2 to AECO differential, US$50/bbl WTI and $1.30 C$/US$
2017 Outlook: Growth to 25,000 boe/d With Pad Drilling

**Capital program**
- 2017 budget: $180 MM
- 19 Hz wells drilled, 16 completed, 16 tied in
- North Aitken Creek expansion to 110 MMcf/d
- Long lead items for 198 MMcf/d Plant 2

**Funding**
- 2017E cash flow from operations: $75 - $80 MM
- 2017E year-end net debt: $190 - $195 MM
  - Expect to draw less than $60 MM of existing $250 MM bank facility

**Corporate production**
- 2017E: 17,500 – 18,500 boe/d
- Exit production: 24,000 – 26,000 boe/d (20% liquids)

**2017 Revenues vs. Costs**

- Field netback: $10.86/boe
- Revenues: $13.13
- Costs: $4.26
- Interest: $0.19
- Royalty: $1.20
- G&A: $1.70
- Transportation: $5.86
- Operating Cost: $1.96
- Hedging: $1.10
- Processing Income: $1.22
- C3/C4 Revenue: $2.56
- C5+ Revenue: $1.57
- Gas Revenue: $0.19

**2017 Capital Program**

- Drilling: 48%
- Completions: 21%
- Wellhead tie-in: 22%
- Gathering & facilities: 5%
- Other: 4%

1. Based on annual production of ~18,000 boe/d at $2.29/GJ AECO, -$0.43/GJ Station 2 to AECO differential, US$50/bbl WTI and $1.30 C$/US$
Free cash flow positive at low prices

• At $2.50/GJ AECO & $50/bbl WTI
  • Only 50% of cash flow is required to maintain production
  • Able to maintain production at low prices
• Reflects strong fundamentals:
  • F&D cost < $3/boe
  • Capital efficiency < $6,000/boe/d
  • Average 9 Bcf over last 49 Upper Montney wells

Flexibility to modify pace of growth

• Positioned for growth at favorable prices
• Operated facilities provides flexibility to manage pace

1. Notes:
  • Assumes 35% base decline; $6,000/boe/d rig efficiency, $5MM/year miscellaneous field capital
  • Prior to hedging gains/losses; Assumes $0.30/GJ Station 2 Differential
  • The ratio between maintenance capital and free cash flow will remain the same as productions grows
Aitken Area Capable of Delivering & Sustaining >100,000 boe/d

Development plan\(^1\) uses <20% of inventory
- Upper Montney has been delineated across the Aitken core development area; 430 Hz locations remaining
- 200 Hz wells over the next 5 years
- 230 additional Upper Montney Hz locations maintain 100,000 boe/d for an additional eight years
- Remaining acreage & landing zones have potential to
  - Increase peak production, or
  - Extend production plateau

Capital efficient asset provides robust growth
- Single continuous rig program provides up to 20 wells per year
  - 17,500 boe/d/rig annually\(^2\)
- At $2.50/GJ AECO and $50/bbl WTI, can fund growth to 100,000 boe/d with cash flow and debt

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1. Drilling plans are subject to annual review and may be modified based on factors including: commodity prices, facility access and regulatory constraints
2. Based on IP 365 of 875 boe/d (half-cycle 9.0 Bcf EUR type curve, $5 MM DCET)
Connecting to Multiple Markets

Egress via three major natural gas pipelines

1. NGTL is part of the TransCanada pipeline system
2. North Montney Mainline subject to regulatory approval
Egress Commitments Provide Transformational Growth

Full cycle economics underpinned by owned & operated infrastructure
- New processing units will be built in 100 MMcf/d (19,000 boe/d) increments
- Plant construction will be timed to align with pipeline expansion

Egress capacity grows to 392 MMcf/d
- Service on all three Canadian gas transmission systems
- Option to flow up to 100% on TCPL by 2019
- Long term, more than 2/3 of egress on TCPL with access to AECO and beyond

Surplus capacity provides optionality
- Connection to different markets enables decisions to maximize netbacks
- Option to accelerate production growth based on market conditions

1. NGTL is part of the TransCanada pipeline system
2. TCPL North Montney Mainline & Enbridge Spruce Ridge projects are subject to regulatory approval
3. Includes Black Swan owned & operated processing & existing McMahon commitments (raw capacity)
4. Unutilized tolls: $0.8 MM/month post Plant 2A; $0.4MM/month post Plant 2B; $1.8 MM/month with no new processing capacity
Source Water Secured for Development Plan

**Beatton River water license**
- License supports peak drilling rate of 100+ Hz wells/year
  - Underpins growth to 100,000 boe/d
  - Permanent intake and storage in place
  - License valid until Dec 31, 2021\(^1\)

**Responsible management & recycling**
- Over 2.2 MMbbl of fresh water storage capacity constructed
- Produced water is recovered and recycled
- Produced water handling infrastructure is temporary by design to allow flexibility of operation and optimization of capital

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1. With renewal provisions
Risk Management & Pricing

- Black Swan utilizes financial and physical contracts to manage price volatility
- Hedge positions can be taken to cover production up to three years out with positions layered in over time

**2017/2018 Gas Pricing Portfolio**

- Gas volumes are delivered primarily to Station 2

**2017/2018 Liquids (C4 & C5+) Pricing Portfolio**

- Liquids (C4 & C5+) represent >30% of revenue & priced vs. WTI

**Natural Gas Hedging & Average Contract Pricing**

- Hedged volumes are delivered primarily to Station 2

**C4 & C5+ Hedging & Average Contract Pricing**

- Note: Put prices are shown net of premiums and Chicago prices are shown prior to transportation costs on Alliance
Differentiation: Performance on Multiple Factors vs. Peers

**EUR - Wells Drilled in Last Three Years**

- Includes three Lower Montney wells

**Operating Cost (2017E)**

- Infrastructure advantage

**Drilling & Completion Cost (2017E)**

- Competitive capital costs

**Gas Weighting (H1 2017)**

- Liquids contribution

**BSE Plant (excludes McMahon production)**

**Black Swan Full Cycle Forward Economics**

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<th>$/boe</th>
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<td>Revenue</td>
<td>20.75</td>
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<tr>
<td>Royalty</td>
<td>1.35</td>
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<td>Opex + transport</td>
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<td>G&amp;A + interest</td>
<td>2.45</td>
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<td>Cash Netback</td>
<td>11.85</td>
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<tr>
<td>Half cycle F&amp;D</td>
<td>(2.95)</td>
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<tr>
<td>Infrastructure</td>
<td>(2.55)</td>
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<tr>
<td>Full cycle F&amp;D</td>
<td>5.50</td>
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<tr>
<td>Profit</td>
<td>6.35</td>
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<tr>
<td>Recycle ratio</td>
<td>2.2x</td>
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</table>

Source: Internal estimates, National Bank Financial, CIBC World Markets & company reports

1. Peer group includes: AAV, ARX, BIR, Canbriam, CR, KEL, NVA, PPY, Saguaro, SRX, TOU, VII
2. Internal estimates, Montney gas & liquids rich wells
3. Inputs based on $2.50/GJ AECO, $50/bbl WTI, 9 Bcf type curve and expected five year growth profile
Delivering on a Long Term Strategy

Repeatable deliverability
- Highly over-pressured reservoir 13-16 kPa/m

Liquids-rich
- Total liquids of 30-50 bbl/MMcf\(^1\) (>50% C5+)

Low capital cost
- Shallow target, surface access and drilling characteristics

Low operating costs
- Owned & operated infrastructure

Scalable
- Large contiguous position

Liquids Rich Montney Rights

Black Swan holds the second largest liquids-rich position in the NEBC Montney fairway
Appendix:
Corporate & Financial Summary
Black Swan Energy Executive Team

David Maddison, P.Eng.
David is President, CEO and founder of Black Swan Energy. He has over 37 years of industry experience focused on conventional and resource plays in Western Canada. Prior to Black Swan, he was with Talisman Energy where he managed multi-disciplinary teams in the WCSB, with production of 100,000 boe/d and annual capital budgets of $1 billion.

Michael Wilhelm, B.Comm., CPA, CGA
Mike is Vice President, Finance and CFO and a co-founder of Black Swan. He has over 30 years experience in the oil and gas industry, with an extensive background in both private and public financings in Canadian and U.S. markets. Mike was involved as a founder and in the ongoing funding of Equatorial Energy and Espoir Exploration. He was also involved with the IPO of Resolute Energy Inc. through the RTO of Equatorial Energy Inc.

Bryan Lang, P.Eng.
Bryan is Vice President, Operations of Black Swan Energy. He has over 27 years of experience in the energy industry focused on Western Canadian operations. He started his career at Chevron Canada and at growth oriented operators Northrock Resources and Peyto Exploration. He played a lead role in the development of horizontal multistage resource plays, and has assembled highly efficient teams focused on safe, low cost operations.

Diane is Vice President, Business Development of Black Swan. She has over 33 years of experience in the energy industry focused on exploitation and development of both conventional and resource plays throughout Western Canada. Most recently she was VP Montney Gas Development and VP Reserves and Strategic Projects at Pengrowth Energy Corporation.

Marc Mereau, P.Eng.
Marc is Chief Operating Officer and a co-founder of Black Swan Energy. He has over 36 years of experience in the oil and gas industry, both domestically and internationally. Prior to Black Swan, Marc worked at Talisman Energy, where he held progressively larger roles including Senior Vice President of Western Operations for North America.

Bruce Thornhill, P.Geo
Bruce is Vice President, Exploration of Black Swan Energy. He has over 35 years of experience in the energy industry focused on conventional and resource play exploration and development throughout Western Canada, primarily in Deep Basin areas. Prior to joining Black Swan, he was a member of the senior management team at TAQA North, first as VP of Exploration and later as VP of the North Asset managing an annual capital budget of $200MM.

Leanne Juneau, B.Comm.
Leanne is Vice President, Land and co-founder of Black Swan. She has over 20 years experience negotiating and executing exploration and development agreements and strategic corporate and asset acquisitions and dispositions within Western Canada totaling over $500 million. She has previously held positions at Redcliffe Exploration, Talisman Energy and Northrock Resources.

Christine Ezinga, B.Comm., CFA
Christine is Vice President of Strategy & Planning at Black Swan Energy. She has over 16 years of diverse capital markets experience in finance, investor relations and corporate development with direct involvement in over $9 billion of executed M&A deals. Prior to joining Black Swan, she was Team Lead – Finance, Business Development at Sinopec Canada, following the successful sale of Daylight Energy to Sinopec.
Black Swan Energy Board of Directors

David Maddison, P.Eng.
David is President, CEO and founder of Black Swan Energy. He has over 37 years of industry experience focused on conventional and resource plays in Western Canada. Prior to Black Swan, he was with Talisman Energy where he managed multi-disciplinary teams in the WCSB, with production of 100,000 boe/d and annual capital budgets of $1 billion.

Dr. James Buckee
In September 1991 Jim was appointed President and Chief Operating Officer for BP Canada Inc. and in May 1993 he was appointed President and Chief Executive Officer of Talisman Energy Inc. (formerly BP Canada). When Jim retired, in October 2007, Talisman was producing over 500,000 boe/d. He also serves on the boards of Magma Global and M-Flow and sits on the advisory Board of Azimuth Capital Management. Jim holds a BSc Honours in Physics from the University of Western Australia and in 1970 he received his PhD in Astrophysics at Oxford University.

David B. Krieger
David is a member of the Warburg Pincus Executive Management team, having joined Warburg in 2000, and focuses on energy investments. Previously, he worked at McKinsey & Company. Mr. Krieger is a Director of Kosmos Energy, MainSail Energy, MEG Energy, Osum Oil Sands, Rubicon Oilfield International, Sheridan Production, Trident Energy and Velvet Energy. Mr. Krieger received a B.S. in economics summa cum laude from the Wharton, an M.S. with high honors from the Georgia Institute of Technology and an M.B.A. with distinction from Harvard Business School.

Jim Nieuwenburg
Jim is an Operating Partner at Azimuth Capital Management. He has over 35 years of experience in the energy sector and over 20 years of executive management and corporate governance experience. Previously, he has held positions at Petromet Resources (CEO), Norcen Energy (Vice President) and Amoco Canada. Jim also serves as a Director on the boards of Corex Resources, Monolith Materials, Recovery Energy Services and Rifco Inc.

Jackie Sheppard, Lead Director
Jackie was the Executive Vice-President, Corporate and Legal and Corporate Secretary for Talisman Energy Inc. She served as Secretary to the Board responsible for Corporate Projects and Acquisitions, Communications and Investor Relations. She currently serves on the Boards of Cairn Energy, Emera Inc. and Seven Generations

Robert Mellema
Robert has been with the Canada Pension Plan Investment Board (CPPIB) since 2008 and focuses on Natural Resources investments. Prior to joining CPPIB, Mr. Mellema worked at UBS on the Canadian M & A team. Mr. Mellema serves as a Director on the boards of Livingston International Inc. and Wolf Midstream and has previously been involved in CPPIB’s investments in Teine Energy and Seven Generations Energy. Mr. Mellema holds a MBA from the Wharton School at the University of Pennsylvania and a Bachelor of Commerce degree from Queen’s University.

Roy Ben-Dor
Roy joined Warburg Pincus in 2011 and previously worked at McKinsey & Company in New York. He is also a director of MainSail Energy and Zenith Energy and works with MEG Energy, Navitas Midstream and Osum Oil & Sands. He received his BA cum laude in psychology and economics with Distinction from Duke University, a J.D. magna cum laude from Harvard Law School and a MBA with high distinction from Harvard Business School.

Dave Pearce
Dave is Deputy Managing Partner with Azimuth Capital Management. During his 36 years in the energy sector, Mr. Pearce has worked in a variety of technical and executive roles in Exploration, Production and Corporate Development as well as an Independent Director in Canada and internationally. Mr. Pearce was President and CEO of Northrock Resources, an intermediate Canadian E&P company. Currently, Mr. Pearce is also a Director of TimberRock Energy, Altex Energy Ltd., Kaisen Energy, Kaden Energy, Entrada Resources and Raging River Exploration.

Ben A. Teine
Ben joined Warburg in 2011 and previously worked at McKinsey & Company. He is also a director of MainSail Energy and Zenith Energy and works with MEG Energy, Navitas Midstream and Osum Oil & Sands. He received his BA cum laude in psychology and economics with Distinction from Duke University, a J.D. magna cum laude from Harvard Law School and a MBA with high distinction from Harvard Business School.
## Historical Financial Summary

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<td>Oil (bbl/d)</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>65</td>
<td>79</td>
<td>54</td>
<td>64</td>
<td>82</td>
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<td>85,832</td>
<td>67,151</td>
<td>74,626</td>
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<td>46,944</td>
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<td>23,916</td>
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<tbody>
<tr>
<td>Net Revenue</td>
<td>15.49</td>
<td>22.13</td>
<td>23.07</td>
<td>17.97</td>
</tr>
<tr>
<td>Hedging Gain (Loss)</td>
<td>4.06</td>
<td>0.27</td>
<td>(0.20)</td>
<td>0.87</td>
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<tr>
<td>Royalties</td>
<td>4.06</td>
<td>0.27</td>
<td>(0.20)</td>
<td>0.87</td>
</tr>
<tr>
<td>General &amp; Administrative</td>
<td>(0.83)</td>
<td>(1.45)</td>
<td>(1.27)</td>
<td>(1.76)</td>
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<tr>
<td>Processing Income</td>
<td>0.14</td>
<td>0.19</td>
<td>0.20</td>
<td>0.27</td>
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<tr>
<td>Interest/Other Expense</td>
<td>(2.02)</td>
<td>(2.87)</td>
<td>(1.91)</td>
<td>(0.87)</td>
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<tr>
<td>Cash Flow From Operations</td>
<td>9.98</td>
<td>8.27</td>
<td>11.85</td>
<td>8.88</td>
</tr>
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</table>

1. Preliminary values, subject to Audit Committee approval
2. NOI as presented does not include realized hedging gains/(losses)
Appendix:
Half-cycle Input Assumptions
Type Curve Assumptions

1. Economics assume Black Swan owned infrastructure; FX C/US$ of $1.30, $1.25 & $1.20 at US$40/bbl, US$50/bbl & US$60/bbl respectively; Station 2 differential = $0.32/mcf
2. Economics include equip & tie-in costs of $0.4 MM/well for total well costs of $5 MM
3. Black Swan pays BC Crown royalties calculated on a sliding scale for gas based on price and production rate & fixed percentage of revenue for liquids
4. Pricing relative to C$WTI: C5+: 91%, C4: 41%, C3: 10% at US$50/bbl oil (realizations include price offsets; trucking of $4.00/bbl included in opex & transportation)
5. Opex & transportation represent the average cost during the first 12-months
Appendix:
Drilling, Completions & Well Results
Drilling Improvements Early in Development

- Black Swan has established a highly effective drilling program as a result of continuous operations.
- One new high horsepower telescopic double top drive rig commissioned in Q3 2013.
- Use of preset rig minimizes costs between surface hole and monobore.
- ‘Tapered’ monobore well design reduces overall well costs, improves frac hydraulics.
- Continuous improvements with drilling fluids, bit and BHA design, rig technology.
- On average wells are drilled and cased in under two weeks; 20+ wells/rig/year.
- Drilling cost per meter reduced 12% in 2017 with improvements in drilling efficiency and longer laterals.
Completions: Optimization of Design

**Completion Design Evolution**

Early move to short stages, optimizing well length and sand loading in development
- 2012/13 – Perf-plug, long stage length, 8 stages x3 perfs/stage, 0.7 t/m
- 2014/15 – Open hole, short stage length, 20 stages, 1.0 t/m
- 2016/17 – Reduced stage length, increased lateral length, 33 stages, 1.33 t/m
- From early development to current design, +33% increase in length, 70% reduction in stage spacing and 80% increase in sand loading resulting in increasing EUR per well and high recovery factor

**Optimizing Recovery Per DSU**
- Extended reach wells to reduce capital
- Tighter stage spacing (65m vs 90m)
- Increased sand intensity with wider inter-well spacing
- Fluid additive technology, diversion techniques
- Unlimited stage fracturing systems

**Current Completion Design**

**Open hole ball drop**
- 2,200 m lateral, 34 stages, single port entry
- 65 m port spacing
- Proppant: 90 tonne/stage, 3,000 tonne/well, 1.33 tonne/m loading
- 13,000 m³ recycled slickwater blend

**Pad design modifications provide**
- Optimized landing interval for frac initiation, geometric completion design
- Multiple wells with modified zipper frac
- Complementary inter-well stage overlap with maximum interference between wells/stages to enhance stimulated reservoir volume
## Upper Montney Multi-Well Pad Production Summary

### 2-C Well Pad

<table>
<thead>
<tr>
<th>Internal Reference</th>
<th>UWI</th>
<th>Completion (Year)</th>
<th>Montney Target</th>
<th>IP30 (MMcf/d)</th>
<th>IP90 (MMcf/d)</th>
<th>IP365 (MMcf/d)</th>
<th>Cum to Aug/17 (Bcf)</th>
<th>EUR (Bcf)</th>
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<tr>
<td>c-E2-C</td>
<td>200/a-091-K 094-A-13/00</td>
<td>2017 Upper</td>
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<td>5,732</td>
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### 19-E Well Pad

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<th>IP365 (MMcf/d)</th>
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<th>EUR (Bcf)</th>
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### 92-C Well Pad

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<th>EUR (Bcf)</th>
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### 22-C Well Pad

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<th>EUR (Bcf)</th>
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### 54-D Well Pad

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<th>EUR (Bcf)</th>
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<tr>
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<td>200/a-075-D 094-H-04/00</td>
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<td>a-C54-D</td>
<td>202/d-066-D 094-H-04/00</td>
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<td>a-A54-D</td>
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<td>2015 Upper</td>
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### 7-H Well Pad

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<th>IP90 (MMcf/d)</th>
<th>IP365 (MMcf/d)</th>
<th>Cum to Aug/17 (Bcf)</th>
<th>EUR (Bcf)</th>
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<tbody>
<tr>
<td>c-B7-H</td>
<td>200/b-095-A 094-G-01/02</td>
<td>2014 Upper</td>
<td>4,233</td>
<td>2,922</td>
<td>3,137</td>
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<td>7.2</td>
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<tr>
<td>c-A7-H</td>
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<tr>
<td>c-A7-H</td>
<td>200/b-096-A 094-G-01/01</td>
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Note: Gas rates shown are raw

- Black Swan utilizes downhole chokes on all Hz wells for operational purposes
- Data presented is based on actual daily production which has been normalized to adjust for downtime
Appendix: Egress & Hedging
### Over 3 Bcf/d New Egress Planned Within Three Years

<table>
<thead>
<tr>
<th>Receipt Point</th>
<th>Delivery Point</th>
<th>2017 Q1</th>
<th>2017 Q2</th>
<th>2017 Q3</th>
<th>2017 Q4</th>
<th>2018 Q1</th>
<th>2018 Q2</th>
<th>2018 Q3</th>
<th>2018 Q4</th>
<th>2019 Q1</th>
<th>2019 Q2</th>
<th>2019 Q3</th>
<th>2019 Q4</th>
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<tbody>
<tr>
<td>Enbridge</td>
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</tr>
<tr>
<td>High Pine</td>
<td>Ft. Nelson T-North</td>
<td>NGTL or Station 2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Jackfish Lake</td>
<td>Ft. St. John T-North</td>
<td>Station 2</td>
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<td>Wyndwood</td>
<td>Ft. St. John T-North</td>
<td>NGTL or Station 2</td>
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<tr>
<td>Spruce Ridge Program</td>
<td>Aitken Creek</td>
<td>NGTL or Station 2</td>
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<tr>
<td>Towerbirch</td>
<td>Tower Lake or Sunset</td>
<td>NGTL</td>
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<td>859</td>
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<tr>
<td>North Montney</td>
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<td>NGTL</td>
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<td>Total NGTL</td>
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<td>2,772</td>
<td>3,174</td>
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Source: Company reports and Black Swan Energy

**Industry has demonstrated support for multiple expansions**

- All six NEBC expansion projects are fully contracted
  - Spruce Ridge & North Montney are pending regulatory approval, all other projects are expected to be on-stream as scheduled
  - Additional expansion projects are expected to be proposed in the near term

**Ongoing downstream work being done ahead of anticipated growth**

- Additional expansion work and de-bottlenecking is underway on the Alberta system to accommodate the growth and increase the ability for western Canadian gas to access North American markets
Key Western Canadian Pipelines & Market Hubs

Infrastructure connects Black Swan to diverse existing and new markets
- NEBC Montney is one of the most active natural gas development area in western Canada
- Western Canadian base production declines and new demand will be predominantly supplied by the Montney
- Existing infrastructure capable of delivering ~12 Bcf/d of gas beyond western Canadian markets (to the US and eastern Canada)

Canadian LNG projects - potential access to offshore markets
- Multiple export licenses issued by Canadian government
- PETRONAS: PNW cancelled, reviewing other west coast LNG options
- LNG Canada (Shell): FID delayed, owners remain supportive
- Woodfibre LNG announced approval for funding to proceed Nov 4, 2016

1. LNG Potential: 4.0+ Bcf/d
2. T-South: 1.7 Bcf/d
3. NGTL West Gate: 2.0 Bcf/d
4. Oil Sands: 1.5 – 2.0 Bcf/d demand
5. Alliance: 1.6 Bcf/d
6. AECO: 4.0 Bcf/d
## Risk Management

### Risk management commodity contracts outstanding (Nov 10, 2017)

#### Natural Gas

<table>
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<tr>
<th>Term</th>
<th>AECO Swaps</th>
<th>AECO Costless Collars</th>
<th>Chicago Swaps</th>
<th>Stn 2 Diff</th>
<th>AECO Puts</th>
<th>AECO/Chicago</th>
<th>Station 2</th>
<th>% of Corp Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4 2017</td>
<td>64,636</td>
<td>$2.67</td>
<td>10,000</td>
<td>$2.85</td>
<td>$3.21</td>
<td>2,306</td>
<td>$4.17</td>
<td>76,471</td>
</tr>
<tr>
<td>Q2 2018</td>
<td>66,810</td>
<td>$2.78</td>
<td>62,366</td>
<td>$0.50</td>
<td>57,084</td>
<td>$0.50</td>
<td>52,471</td>
<td>$0.49</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>35,971</td>
<td>$2.69</td>
<td>57,084</td>
<td>$0.50</td>
<td>52,471</td>
<td>$0.49</td>
<td>84,500</td>
<td>($0.46)</td>
</tr>
<tr>
<td>Q4 2018</td>
<td>35,590</td>
<td>$2.69</td>
<td>32,674</td>
<td>($0.38)</td>
<td>23%</td>
<td>32,674</td>
<td>($0.38)</td>
<td>57,084</td>
</tr>
<tr>
<td>Q1 2019</td>
<td>40,260</td>
<td>$2.65</td>
<td>20,717</td>
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<td>20,717</td>
<td>$0.36</td>
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<tr>
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<td>34,330</td>
<td>($0.37)</td>
<td>1%</td>
<td>34,330</td>
<td>($0.37)</td>
<td>40,260</td>
</tr>
<tr>
<td>Q3 2019</td>
<td>1,597</td>
<td>$2.86</td>
<td>32,674</td>
<td>($0.38)</td>
<td>1%</td>
<td>32,674</td>
<td>($0.38)</td>
<td>34,330</td>
</tr>
<tr>
<td>Q4 2019</td>
<td>1,941</td>
<td>$2.70</td>
<td>200</td>
<td>$55.00</td>
<td>67.25</td>
<td>200</td>
<td>$55.00</td>
<td>67.25</td>
</tr>
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</table>

#### Annual

<table>
<thead>
<tr>
<th>Year</th>
<th>AECO Swaps</th>
<th>AECO Costless Collars</th>
<th>Chicago Swaps</th>
<th>Stn 2 Diff</th>
<th>AECO Puts</th>
<th>AECO/Chicago</th>
<th>Station 2</th>
<th>% of Corp Forecast</th>
</tr>
</thead>
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<tr>
<td>2017</td>
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<td>$2.77</td>
<td>11,684</td>
<td>$2.83</td>
<td>$3.21</td>
<td>5,540</td>
<td>$4.14</td>
<td>48,708</td>
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<td>53,674</td>
<td>($0.37)</td>
<td>23%</td>
<td>53,674</td>
<td>($0.37)</td>
<td>48,708</td>
</tr>
<tr>
<td>2019</td>
<td>7,176</td>
<td>$2.76</td>
<td>200</td>
<td>$55.00</td>
<td>67.25</td>
<td>200</td>
<td>$55.00</td>
<td>67.25</td>
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</table>

#### Condensate & Butane

<table>
<thead>
<tr>
<th>Term</th>
<th>CSWTI Swaps</th>
<th>CSWTI Costless Collars</th>
<th>CSWTI Puts</th>
<th>% of Corp Forecast</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Volume (bbl/d)</td>
<td>Price (C$/bbl)</td>
<td>Volume Bbl/d</td>
<td>Put Strike (C$/bbl)</td>
</tr>
<tr>
<td>Q4 2017</td>
<td>1,233</td>
<td>$65.46</td>
<td>291</td>
<td>$56.77</td>
</tr>
<tr>
<td>Q1 2018</td>
<td>1,941</td>
<td>$66.88</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q2 2018</td>
<td>1,830</td>
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<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>1,611</td>
<td>$66.89</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q4 2018</td>
<td>1,434</td>
<td>$66.64</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q1 2019</td>
<td>700</td>
<td>$65.92</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q2 2019</td>
<td>677</td>
<td>$65.75</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q3 2019</td>
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<td>$65.54</td>
<td>200</td>
<td>$55.00</td>
</tr>
<tr>
<td>Q4 2019</td>
<td>584</td>
<td>$65.54</td>
<td>200</td>
<td>$55.00</td>
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#### Annual

<table>
<thead>
<tr>
<th>Year</th>
<th>CSWTI Swaps</th>
<th>CSWTI Costless Collars</th>
<th>CSWTI Puts</th>
<th>% of Corp Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume (bbl/d)</td>
<td>Price (C$/bbl)</td>
<td>Volume Bbl/d</td>
<td>Put Strike (C$/bbl)</td>
</tr>
<tr>
<td>2017</td>
<td>951</td>
<td>$64.85</td>
<td>158</td>
<td>$58.96</td>
</tr>
<tr>
<td>2018</td>
<td>1,702</td>
<td>$66.88</td>
<td>158</td>
<td>$58.96</td>
</tr>
<tr>
<td>2019</td>
<td>652</td>
<td>$65.72</td>
<td>200</td>
<td>$55.00</td>
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</table>
Appendix:
Resources & Reserves
Substantial Resource to Unlock

Capable of sustaining 2 Bcf/d for 10 years

- Gas-in-place supports long-term growth
  - Average 250 Bcf/DSU OGIP
  - 78 Tcf of gas-in-place
- Over 2,500 Hz well inventory and 14 Tcfe of recoverable resource (two horizons only)
- Potential for development of four horizons

Internal Estimate of Resource

<table>
<thead>
<tr>
<th></th>
<th>DSUs</th>
<th>Base Case¹</th>
<th></th>
<th>Upside Estimate²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>Hz Locations #</td>
<td>Recoverable Resource Tcfe</td>
<td></td>
</tr>
<tr>
<td>Aitken</td>
<td>146</td>
<td>1,176</td>
<td>7.9</td>
<td>2,353</td>
</tr>
<tr>
<td>Laprise/Sojer</td>
<td>102</td>
<td>822</td>
<td>4.1</td>
<td>1,644</td>
</tr>
<tr>
<td>Jedney</td>
<td>64</td>
<td>516</td>
<td>2.6</td>
<td>1,031</td>
</tr>
<tr>
<td>Total</td>
<td>312</td>
<td>2,514</td>
<td>14.6</td>
<td>5,028</td>
</tr>
</tbody>
</table>

1. 4.5 wells/DSU/layer (300 m spacing), two layers developed, ranging from 5.0-9.0 Bcf/well, 90% land utilization
2. 4.5 wells/DSU/layer (300 m spacing), four layers developed, ranging from 7.0-11.0 Bcf/well, 90% land utilization

Note: Based on management estimates, liquids converted at 1 bbl: 6 Mcf for gas equivalency, 40 bbl/MMcf liquids and 8% shrinkage
Growth Plan Supported by Low Cost Reserves

2016 Company Interest Reserves

<table>
<thead>
<tr>
<th></th>
<th>Gas (MMcf)</th>
<th>NGLs (mbbl)</th>
<th>Total (mboe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDP</td>
<td>190,215</td>
<td>6,344</td>
<td>38,046</td>
</tr>
<tr>
<td>Total proved</td>
<td>850,804</td>
<td>29,010</td>
<td>170,811</td>
</tr>
<tr>
<td>Proved + probable</td>
<td>2,366,565</td>
<td>83,095</td>
<td>477,522</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDP</td>
<td>649</td>
<td>366</td>
</tr>
<tr>
<td>Proved</td>
<td>2442</td>
<td>898</td>
</tr>
<tr>
<td>Proved + probable</td>
<td>8,583</td>
<td>2,125</td>
</tr>
</tbody>
</table>

2016 PDP adds replaced 196% of annual production

2016 Total Reserves

<table>
<thead>
<tr>
<th></th>
<th>PDP</th>
<th>Proved Non-Producing</th>
<th>Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDP</td>
<td>64%</td>
<td>8%</td>
<td>28%</td>
</tr>
<tr>
<td>Proved</td>
<td>64%</td>
<td>8%</td>
<td>28%</td>
</tr>
<tr>
<td>Proved + probable</td>
<td>64%</td>
<td>8%</td>
<td>28%</td>
</tr>
</tbody>
</table>

2016 Reserves: Value

2016 Reserves: Locations

Peer Comparison: 3 Year 2P FD&A (incl. FDC)

1. GLJ January 1, 2017 price forecast, includes 1P FDC $0.9 B and 2P FDC $2.4 B
2. Natural gas volumes converted to barrels of oil equivalent at 6,000 cubic feet per barrel (6 mcf = 1 boe)
**Proved plus probable reserves**

- 2016 YE 2P reserves were 478 MMboe, of which 75% are in the Upper Montney where development is focused
- 2P reserves for drilled wells and offset locations are based on test results or longer term production

**Infill locations & PUD wells**

- GLJ reserves for infill locations assume four wells/layer/DSU and are based on regional performance and OGIP considerations, the Proved component is typically 75 – 80% of the 2P estimate
- GLJ infill type curve assumptions:
  - Upper Montney: 7.5-9.0 Bcf
  - Lower Montney: 4.5 Bcf
- Infill PUD and Probable locations are booked between economic well tests within 1.5 and 3 miles respectively
- PUD inventory does not exceed five years of drilling

**Economics**

- GLJ’s economic parameters such as Future Development Capital (FDC), opex and liquid recoveries are in line with BSE’s development plan and are consistent with what they use for other operators
- Year-end valuation is done at GLJ’s Dec 31, 2016 price forecast
- GLJ has booked approximately 50% of what Black Swan considers the core development area
**Black Swan Liquids Yields**

**Black Swan Corporate Liquid Yield**

Black Swan’s plant provides superior liquids yield vs. McMahon

**Superior recoveries realized through Black Swan’s North Aitken plant**

<table>
<thead>
<tr>
<th>bbl/MMcf</th>
<th>August 2017</th>
<th>Average 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corporate</td>
<td>North Aitken</td>
</tr>
<tr>
<td>C5+</td>
<td>25</td>
<td>31</td>
</tr>
<tr>
<td>C3/C4</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>53</td>
</tr>
</tbody>
</table>

- Until August 2017 North Aitken was operated to minimize C3 recovery and maximize gas heat content to optimize netbacks (~10 bbl/MMcf C3/C4 vs. design of 20 bbl/MMcf)
- Average McMahon recoveries:
  - 19 bbl/MMcf (73% C5+); 11% liquids
- Corporate liquids ratio will increase as Black Swan expands its owned and operated processing capacity and McMahon volumes are a smaller percentage
- Long term expected liquids recovery: 30-50 bbl/MMcf (varying based on propane prices)
Base Decline & Impact of New Production

Black Swan Wells by Vintage

Base decline on existing wells: ~35%
Appendix:
Montney Fairway
Industry investment

- Rig activity: 11 rigs operating Oct 2017 vs. one Oct 2016
- North Montney production peaked at 1.4 Bcf/d in Jan 2017
- Juniors and Intermediates represent ~50% of total North Montney production, up from ~30% three years ago

North Montney Production

June 2015 & 2017 volumes impacted by Enbridge McMahon turnarounds

1. Historical Tourmaline production represents Shell prior to the Gundy acquisition; UGR combined with historical Painted Pony production
Montney: Proven Top-Tier North American Play

- Montney over 250 m thick
- Four landing zones are proven Hz targets either on or immediately adjacent to Black Swan lands
- Consistent, high quality reservoir exhibited across acreage; shelf edge to offshore depositional environment
- Porosity averages 5.0% in the Upper Montney and 4.5% in the Lower. Both zones have very low water saturation
- Favourable stress regime, low clay content and low Poisson’s ratio conducive to effective development of natural and induced fractures

Source: Montney facies base map modified after Canadian Discovery Ltd. (2008)