

## Datashare 102

### *Public information regarding recent oil discoveries in the Nanushuk and Torok Formations in Arctic Alaska*

### *AAPG Datashare document to accompany Petroleum systems framework of significant new oil discoveries in a giant Cretaceous (Aptian–Cenomanian) clinothem in Arctic Alaska*

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#### **Introduction**

Oil discoveries in the Cretaceous Nanushuk and Torok Formations have been announced during 2015–2018 through industry press releases and other documents made available on company web sites. Relatively little supporting information has been released to the public. This datashare consists of public documents that contain information released by industry, including estimates of oil volumes discovered and limited technical data. This information is provided as context for data and interpretations presented in the *AAPG Bulletin* paper cited above. The information contained in these documents cannot be verified by the author. The documents are presented in chronological order of their original release.

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DENVER, June 2, 2015 /PRNewswire/ -- 70 & 148, LLC (Armstrong) announced today the successful completion of the 2014/2015 winter campaign.

Two Nanushuk wells were tested this year, including the Qugruk 8 (Q-8) vertical well, which tested a small portion of the net pay zone and flowed 30 degree API gravity crude at rates of up to 2,160 barrels of oil per day (BOPD). The Qugruk 301 (Q-301), two miles north of Q-8, tested a 2,000 foot horizontal lateral. The well flowed at tubing constrained rates as high as 4,600 BOPD with minimal bottom hole pressure drawdown.

In the East Alpine field, two new penetrations were completed in the Alpine Formation, adding to the previous two penetrations. Three of these wells have encountered oil productive Alpine sand in excess of 95 feet thick at a depth of 6500 feet with porosities ranging from 15% to 25%. Well control and seismic data indicates the oil pool covers an area in excess of 15,000 acres.

The successful drilling program is the result of a joint exploration effort underway since 2012. Repsol operates the consortium and holds a 70% interest, Armstrong holds a 22.5% stake and GMT Exploration Company has 7.5%.

The activity to date since the beginning of exploration has resulted in the discovery of several oil fields on the North Slope of Alaska. All 16 wells (including sidetracks) drilled by the consortium have found hydrocarbons, most with multiple pay zones. In the Nanushuk reservoir, the consortium has drilled seven appraisal wells to date and has proven an oil pool that covers more than 25,000 acres, at a depth of 4,100 feet, with an oil column of 650+ feet, and up to 150 feet of net pay with an average porosity of 22%.

Although additional drilling is needed to confirm the ultimate size of some discoveries, this season's results justify moving forward with development, and two of the fields are in the process of being permitted for development -- one in the Nanushuk and another in the Alpine Fm.

"These new discoveries show the immense potential that still exists on the North Slope of Alaska," said Bill Armstrong, President of Armstrong Oil & Gas. "We strongly believe that there are many great conventional oil projects yet to be found and developed in Alaska, and with the passage of the More Alaska Production Act (SB 21), the state has encouraged new drilling and future developments."

DENVER, Oct. 13, 2015 /PRNewswire/ -- Repsol and privately held Armstrong (70 & 148, LLC 75% and GMT Exploration Company LLC 25%) have reached an agreement to strategically re-align their interests in their Alaska North Slope exploration and development venture. The confidential agreement includes a combination of cash, operational control, drilling commitments and contractual adjustments for monetary considerations in excess of \$800 million.

Per the restructured agreement, Armstrong has acquired a 15% working interest (to add to its 30%) in the initial development area near the Colville River Delta where the majority of exploratory and appraisal drilling activities have been carried out. In addition, Armstrong has the option of acquiring an additional 6% and assuming operatorship in the development area. Armstrong also acquired a 45% working interest (to add to its 30%) and operatorship in the jointly-owned exploratory lands (750,000+ acres). It is anticipated that Armstrong, after exercising its 6% option, will own 51% and Repsol 49% in the development area, and Armstrong 75% and Repsol 25% in the exploration area. As part of this agreement, the previously planned 2015-16 winter appraisal drilling campaign has been deferred.

Over the last four years, the venture has drilled 16 wildcat and appraisal wells on the North Slope resulting in a 100% track record of finding oil with most wells having oil pay in multiple zones. Third-party engineering firm DeGolyer and MacNaughton reports C1 reserves of 497 million barrels of oil (MMBO), C2 reserves of 1,438 MMBO and C3 reserves of 3,758 MMBO. These "Contingent" reserve classifications would be converted to Proven, Probable, and Possible where appropriate upon the final investment decision.

With each drilling campaign, the project has become more valuable, larger in scope and more capital intensive than the parties originally envisioned. To accommodate this success and meet the changing needs of the partners, Repsol and Armstrong amended their initial Acquisition and Development Agreement. For Repsol, the transaction aligns the Alaska project with the company's new strategic plan to integrate its recently acquired Talisman assets into its portfolio and realign legacy assets. For Armstrong, the transaction concentrates the company's activities on the North Slope and allows it to focus on its core strengths: exploration and development of shallow, conventional oil plays identified by advanced 3D seismic stratigraphic technologies.

Armstrong and Repsol are in the early stages of developing their new discoveries in the Colville River Delta area located between the 3.5 billion barrel Kuparuk River Field and the 700+ million barrel Alpine Field. Permitting work is ongoing for a three-pad development. Field production rates are estimated to be on the order of 120,000 barrels of oil per day.

"Armstrong and Repsol's North Slope project is representative of the new movement in Alaska where smaller independents work and operate in areas previously dominated by major oil companies," said Bill Armstrong, President of Armstrong Oil & Gas, Inc. "As an example, the two most recent developments on the North Slope are operated by independents: Oooguruk Field developed by Pioneer Natural Resources and the Nikaitchuq Field developed by ENI. Both fields were originally generated and assembled by Armstrong Oil & Gas, Inc. With oil flowing through the Trans-Alaska pipeline at about 25% of capacity, Alaska is working hard to attract new oil and gas companies to the state. A new competitive tax regime is now in place along with a pro-development mindset."

SOURCE Armstrong Oil & Gas, Inc.

## **REPSOL MAKES THE LARGEST U.S. ONSHORE OIL DISCOVERY IN 30 YEARS**

- **The contingent resources currently identified in the Nanushuk play in Alaska amount to approximately 1.2 billion barrels of recoverable light oil.**
- **The Horseshoe wells extend by 20 miles (32 kilometers) a play already uncovered in previous campaigns in an area known as Pikka.**
- **Preliminary development concepts for Pikka anticipate first production there from 2021, with a potential rate approaching 120,000 barrels of oil per day.**
- **The Horseshoe-1 and Horseshoe-1A wells drilled in the 2016-2017 winter campaign confirm Nanushuk as a significant emerging play in Alaska's North Slope.**

Repsol and partner Armstrong Energy have made in Alaska the largest U.S. onshore conventional hydrocarbons discovery in 30 years. The Horseshoe-1 and 1A wells drilled during the 2016-2017 winter campaign confirm the Nanushuk play as a significant emerging play in Alaska's North Slope.

The contingent resources identified with the existing data in Repsol and Armstrong Energy's blocks in the Nanushuk play in Alaska could amount to approximately 1.2 billion barrels of recoverable light oil.

Repsol has been actively exploring Alaska since 2008, and since 2011 the company has drilled multiple consecutive discoveries on the North Slope along with partner Armstrong.

The successive campaigns in the area have added significant new potential to what was previously viewed as a mature basin. Additionally Alaska has significant infrastructure which allows new resources to be developed more efficiently.

Repsol holds a 25% working interest in the Horseshoe discovery and a 49% working interest in the Pikka Unit. Armstrong holds the remaining working interest and is currently the operator.

Prior to drilling Horseshoe, Repsol as operator drilled 13 exploration and appraisal wells on the North Slope, which led to multiple reservoir discoveries currently included in the Pikka Unit.

The Horseshoe discovery extends the Nanushuk play more than 20 miles south of the existing discoveries achieved by Repsol and Armstrong in the same interval within the Pikka Unit during 2014 and 2015, where permitting for development activities are underway. A significant percentage of the above noted resources are expected to be reclassified as proven and probable reserves upon sanctioning of the Nanushuk Development Project.

Preliminary development concepts for Pikka anticipate first production there from 2021, with a potential rate approaching 120,000 barrels of oil per day.

The Horseshoe-1 discovery well was drilled to a total depth of 6,000 ft. (1,828 meters) and encountered more than 150 ft. of net oil pay in several reservoir zones in the Nanushuk section. The Horseshoe-1A sidetrack was drilled to a total depth of 8,215 ft. and encountered more than 100 ft. of net oil pay in the Nanushuk interval as well.

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# ACQUIRING WORLD CLASS OIL ASSETS IN THE PROLIFIC ALASKA NORTH SLOPE

1 November 2017

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- ◇ **Transaction overview**
- ◇ **Investment highlights**
- ◇ **Asset summary**
- ◇ **Oil Search impact**
- ◇ **Conclusions**



# TRANSACTION OVERVIEW



## Acquisition and operatorship of a Tier 1 oil field, under appraisal with exploration upside, at attractive point in the oil price cycle

- ◇ Oil Search to acquire a 25.5% interest in the Pikka Unit and adjacent exploration acreage and 37.5% in the Horseshoe Block, located in Alaska's North Slope, from Armstrong Energy LLC and GMT Exploration Company LLC for US\$400m in cash
  - Conditional on Committee for Foreign Investment in the US (CFIUS) approval
  - Acquisition to be funded from OSH's existing cash position
- ◇ OSH may at any time before 30 June 2019, at its sole election, acquire a further 25.5% interest in the Pikka Unit and adjacent exploration acreage and 37.5% interest in the Horseshoe Block (the balance of Armstrong and GMT's interests) for US\$450m
  - OSH will carry the seller's share of the 2018/19 appraisal programme (~US\$25-30m) if option not exercised by 1 June 2018
  - OSH can assign the option (by mutual agreement) or acquire and on-sell the interest
- ◇ OSH will assume operatorship on 1 June 2018
  - Armstrong will operate the 2017/18 drilling programme (one well with side track and test)
- ◇ Repsol will retain its 49% interest in the Pikka Unit and 25% interest in Horseshoe Block and adjacent exploration
- ◇ Halliburton will assist OSH to build local Alaskan operating capability

### TRANSACTION OWNERSHIP IMPACT

Phase	Lease Category	Oil Search	ARMSTRONG Energy LLC	GMT Exploration Company LLC	REPVOL
Pre-transaction	Pikka Unit	-	38.25 %	12.75 %	49 %
	Horseshoe	-	56.25 %	18.75 %	25 %
	Exploration	-	56.25 %	18.75 %	25 %
	Hue Shale	-	100 %	-	-
Current transaction	Pikka Unit	25.5 %	19.125 %	6.375 %	49 %
	Horseshoe	37.5 %	28.125 %	9.375 %	25 %
	Exploration	25.5 %	37.125 %	12.375 %	25 %
	Hue Shale	37.5 %	62.5 %	-	-
Post OSH's option to acquire balance	Pikka Unit	51 %	-	-	49 %
	Horseshoe	75 %	-	-	25 %
	Exploration	51 %	18 %	6 %	25 %
	Hue Shale	75 %	25 %	-	-

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# BACKGROUND AND STRATEGIC RATIONALE

Extensive screening identified this compelling opportunity that met OSH's strict investment criteria & was pursued proactively



1

Quality of the investment opportunity

2

Focused investment & ability to replicate PNG materiality

3

Balancing portfolio between oil & gas with ability to drive value, consistent with stated 2015 Strategic Review Recommendations

4

Staged investment profile with option to capture further upside value

# INVESTMENT HIGHLIGHTS

## Unique opportunity for OSH to participate in a large, world class oil discovery with material growth potential



Oil Search



**World class, Tier 1 oil asset with material growth potential**

- One of the largest conventional oil fields discovered in the US in more than 30 years
- 500 mmbbls<sup>(1)</sup> – 1.2 bnbbbls<sup>(2)</sup> with development targeting production of 80,000-120,000 bopd (gross)
- Over 20 high quality exploration leads with five demonstrating over 100 mmbbls mean potential



**Commercially attractive terms providing scope for significant shareholder returns**

- Attractive acquisition price of US\$1.3 – US\$3.1 per barrel discovered resource
- Low break-even cost asset acquired at an attractive point in the oil price cycle
- Financing flexibility to fund the appraisal and development of the Alaskan projects, as well as LNG expansion projects in PNG, while maintaining existing dividend policy. No requirement to raise equity
- Transaction expected to be NAV per share accretive



**Builds a position in an established, prolific oil producing province**

- Existing infrastructure with open and direct access
- Well-developed operations and supply bases with skilled workforce
- Attractive fiscal regime
- Transparent regulatory administration and stable government



**Low risk operating plan leveraging important strategic partnerships**

- Following appraisal, targeting FEED 2019, FID in 2020 and first oil in 2023
- Agreement with Halliburton to assist in building OSH's Alaskan operating capabilities
- Armstrong committed to assist OSH with secondees as part of agreed transition plan
- Three-year alliance with Armstrong to identify and pursue additional growth opportunities in Alaska
- Continuing the strong relationship with Repsol following successful collaboration in PNG



**Leverages OSH's capabilities and complements OSH's existing top quartile, high returning PNG gas portfolio**

- Consistent with OSH's objective of acquiring high quality oil assets without diluting our leading PNG portfolio
- Provides commodity and geographic diversification
- Leverages OSH's experience in successfully operating oil fields and working with local communities and governments
- Adds to, and does not distract from, OSH's existing PNG growth projects

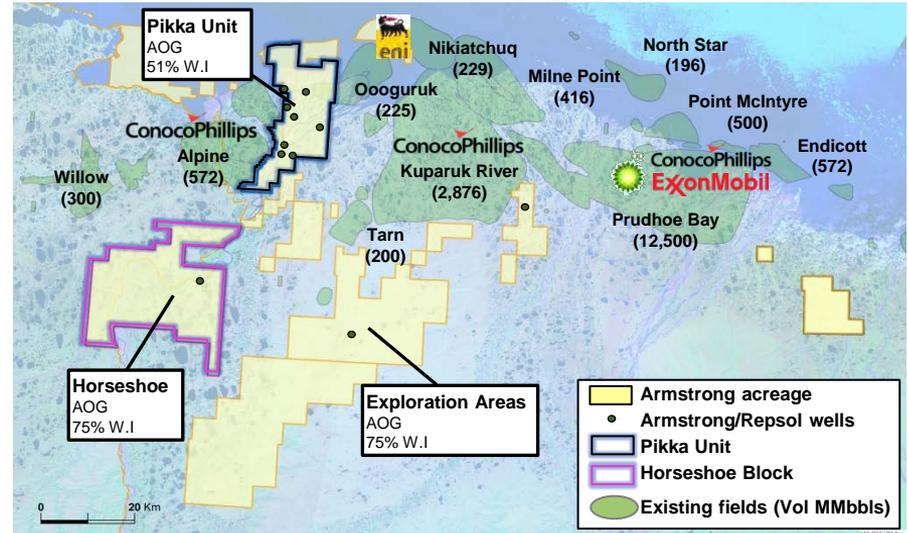
(1) OSH estimate of gross resource for purposes of the acquisition; (2) Repsol press release of 9 March 2017

# WORLD CLASS OIL PORTFOLIO

## Proven basin, adjacent to giant fields and a long operating history

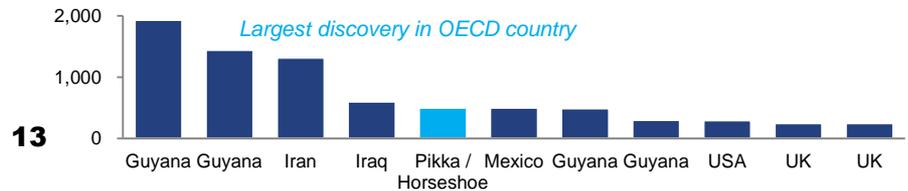


- ◆ OSH is acquiring 351 leases (2,889 km<sup>2</sup>) including:
  - Pikka Unit Nanushuk oil field and Horseshoe Block
  - Quality exploration areas
  - 3D seismic coverage & well data
- ◆ 500 mmbbls – 1.2 bnbbbls discovery is one of the largest US onshore conventional oil discoveries in 30 years:
  - Independent US experts assisted OSH develop its own reservoir simulation and valuation models
  - Proven basin that is adjacent to giant existing fields owned by majors
- ◆ 19 exploration and appraisal wells and extensive 3D and 2D seismic in the existing leases:
  - Repsol farmed into the acreage in 2010
  - Nanushuk oil discovered in 2013 and Pikka Unit formed
  - Horseshoe 1 well drilled in 2017, located 30km south of the nearest Nanushuk well, confirmed world class scale oil field



### GLOBALLY SIGNIFICANT OIL DISCOVERY

One of the largest conventional oil discoveries over the last 3 years (mmbbls)<sup>(1)</sup>



(1) Source: Wood Mackenzie

# STRONG FUNDING AND LIQUIDITY POSITION

## Balance sheet strength supports both PNG LNG & Alaskan assets



- ◆ Strong existing free cash flow generation from producing assets
- ◆ Current total liquidity is ~US\$2 billion, comprising US\$1.2 billion of cash and US\$850 million of undrawn corporate facilities
- ◆ Sufficient financing flexibility to fund both the development of LNG expansion and Alaskan projects:
  - Both Alaska and LNG expansion developments to be funded with project financing (same as PNG LNG Project)
  - PNG LNG Project debt is being paid down over the same period
  - Gearing forecast to remain well below lenders' covenant in the 40 – 45% range during the development phases including PNG & Alaskan projects
  - Flexibility exists to wind back exploration spending if needed to prioritise the development of these world class assets
  - Discretion to exercise option and on-sell enlarged interests post appraisal, to reduce development expenditure if in the best interest of shareholders
- ◆ Based on current oil price and project development cost forecasts, there is adequate capacity to fund these developments without raising additional equity or impacting our dividend policy

### TOTAL LIQUIDITY (US\$M)



### FUNDING

- ◆ The initial acquisition cost of US\$400m is funded from surplus cash
- ◆ 2018 capital expenditure for Alaska of ~US\$50m
- ◆ Development cost are estimated to be ~US\$4bn with OSH net equity funding requirements of ~US\$300 – 400 million payable over three year construction period
- ◆ Project financing for Alaskan projects readily available due to country stability and maturity of industry
- ◆ Additional debt funding capacity at corporate level, if required

# KEY ACQUISITION METRICS

## Highly attractive and competitive entry price



### POTENTIAL DISCOVERED RESOURCES

- ◆ Gross OSH acquisition estimate of discovered Nanushuk & satellites fields resources of 500 mmbbls (discovered resource)
- ◆ Repsol believes there could be up to 1.2 bnbbbls resource<sup>(1)</sup>
- ◆ Acquisition cost to OSH of ~US\$3.1/bbl based on OSH's estimate of discovered resource or ~US\$1.3/bbl based on Repsol's estimate<sup>(1)</sup>

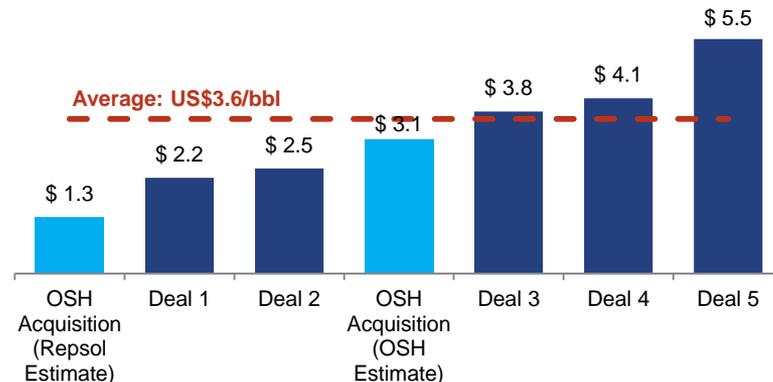
### POTENTIAL RESOURCES

- ◆ Estimated 1.5 bnbbbls unrisks resource potential outside Pikka Unit but within existing acreage

### FLEXIBILITY TO ACQUIRE REMAINING INTEREST

- ◆ OSH has the option to acquire all of Armstrong and GMT's remaining interests and on-sell if there is the potential to add further value
- ◆ Able to make the decision based on updated views of the resources and the development plan
- ◆ Disciplined approach to maximise shareholder value

### PRECEDENT TRANSACTION MULTIPLES (US\$/BBL)<sup>(2)</sup>



- ✓ Low breakeven cost asset acquired at an attractive point in the oil price cycle
- ✓ Compares favourably to other pre-development global transactions averaging US\$3.6/bbl of resource
- ✓ Potential to be lowest cost, based on Repsol's resource estimate

(1) Repsol press release of 9 March 2017

(2) Comparable list of recent global oil transactions involving pre-development assets since 2015

# INDICATIVE TIMETABLE TO FIRST OIL

Appraisal programme will define final configuration & timing of the Nanushuk development



- ◆ 2017/18: 1 appraisal well
- ◆ 2018/19: 3-6 appraisal wells
- ◆ EIS submitted 2016. Approval expected 2018
- ◆ FEED contractors selected
- ◆ Contracting
- ◆ Approvals
- ◆ Option to acquire sellers' remaining interests by mid-2019
- ◆ Ongoing exploration
- ◆ Drilling ~60+ producers & ~60+ injectors from 3 drill centres
- ◆ Construction of ~60 km pipelines
- ◆ Construction of ~42 km roads
- ◆ 1 central processing facility
- ◆ Ongoing exploration
- ◆ Target ~80,000-120,000 bbl/d plateau (gross)
- ◆ Target 500 mmbbls oil recoverable from Phase 1
- ◆ Ongoing exploration

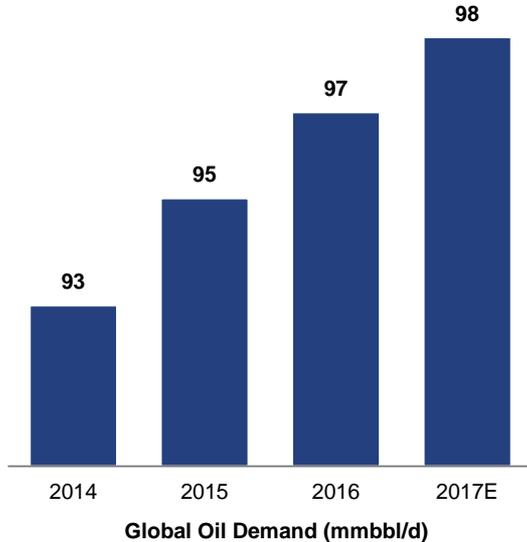


# MEDIUM-TERM OIL MARKET FUNDAMENTALS IMPROVING

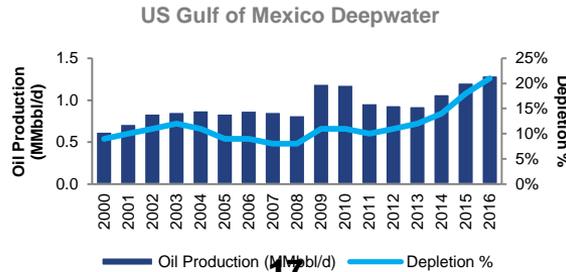
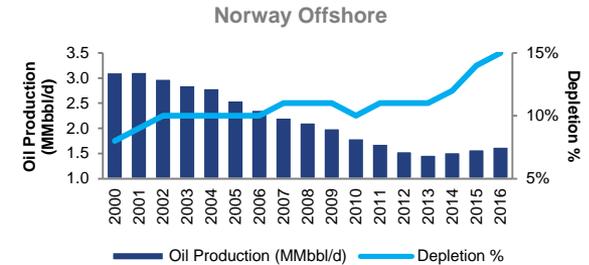
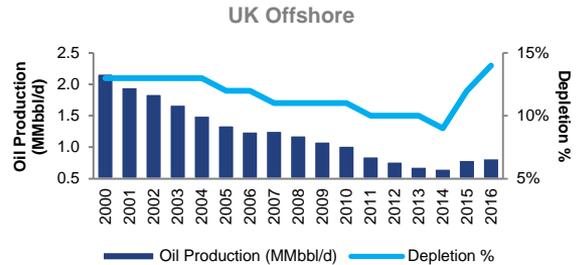


◆ Non-OPEC capex for producing fields has fallen from a peak of ~US\$280bn in 2014 to current levels of ~US\$125bn. This underinvestment will lead to increases in depletion rates from traditional oil basins against a backdrop of robust and increasing oil demand. This further enhances the appeal of OSH's acquisition

## CONTINUED GROWTH IN DEMAND<sup>(1)</sup>



## DEPLETION RATES INDICATE DECLINES FROM KEY BASINS<sup>(1)</sup>



(1) Schlumberger; note that depletion calculated as annual production divided by proved-developed reserves at end of same year

# ACCESS TO EXISTING INFRASTRUCTURE

**Extensive existing infrastructure with ullage and very supportive and stable State government**



- ◆ Nanushuk discovery lies between Alpine & Kuparuk River fields
- ◆ Established infrastructure:
  - Deadhorse is major supply base for Alaska North Slope
  - Dalton Highway allows year round road support
  - Trans Alaska Pipeline System (TAPS) has capacity of 2.1mbopd of capacity and open access regime due to declining production of existing North Slope fields
- ◆ Opportunity to work with existing infrastructure owners in the region to access ullage for an optimised development and to minimise development costs
- ◆ Crude exported from Valdez terminal by tanker



TAPS open access pipeline **18**



# ALASKA BUILDS ON OSH'S CAPABILITY

Complementary lower cost evaluation and appraisal, creates world class quality and balanced portfolio mix



Papua New Guinea (Papuan Basin)		Alaska (North Slope)	
<ul style="list-style-type: none"> <li>5 bnboe discovered<sup>(1)</sup></li> </ul>	Proven reserves	<ul style="list-style-type: none"> <li>37 bnboe discovered<sup>(1)</sup></li> </ul>	
<ul style="list-style-type: none"> <li>7 bnboe<sup>(2)</sup></li> </ul>	Yet-to-find	<ul style="list-style-type: none"> <li>60 bnboe<sup>(2)</sup></li> </ul>	
<ul style="list-style-type: none"> <li>Hides Gas Field 1987 (1 bnboe<sup>(1)</sup>)</li> </ul>	Largest field	<ul style="list-style-type: none"> <li>Prudhoe Bay Field 1968 (19 bnboe<sup>(1)</sup>)</li> </ul>	
<ul style="list-style-type: none"> <li>89% discovered volume is gas</li> </ul>	Phase	<ul style="list-style-type: none"> <li>78% discovered volume is oil</li> </ul>	
<ul style="list-style-type: none"> <li>Fold Belt &amp; Foreland Basin</li> </ul>	Geological setting	<ul style="list-style-type: none"> <li>Fold Belt &amp; Foreland Basin</li> </ul>	
<ul style="list-style-type: none"> <li>Seasonal activities onshore</li> <li>Remote with seasonal influences</li> <li>Working collaboratively with local stakeholders</li> </ul>	Operating environment	<ul style="list-style-type: none"> <li>Exploration restricted to the winter season</li> <li>Development all year round</li> <li>Working collaboratively with local stakeholders</li> </ul>	
<ul style="list-style-type: none"> <li>Higher cost due to remote logistics</li> <li>Highlands well costs &gt;US\$100m/well</li> <li>2D seismic &gt; US\$200k/km</li> </ul>	Cost environment	<ul style="list-style-type: none"> <li>Close proximity to infrastructure</li> <li>Onshore drilling &lt;US\$30m/well</li> <li>2D &amp; 3D seismic</li> </ul>	
<ul style="list-style-type: none"> <li>Moderate development lead time for gas</li> <li>New discoveries require new infrastructure</li> </ul>	Development options	<ul style="list-style-type: none"> <li>Ullage available via open access pipeline</li> <li>Only in-field infrastructure required for export</li> </ul>	

- ◇ Replicate success of Halliburton agreement post acquisition of Chevron's PNG assets
- ◇ Ability to leverage OSH's oil operatorship experience
- ◇ Apply key learnings from PNG exploration and project development experience, given Alaska's analogous geology to PNG
- ◇ Execute cost-effective appraisal programme
- ◇ Build on strong existing relationship with Repsol
- ◇ Work collaboratively with community and other stakeholders
- ◇ Leverage experience working with Majors to commercialise resource

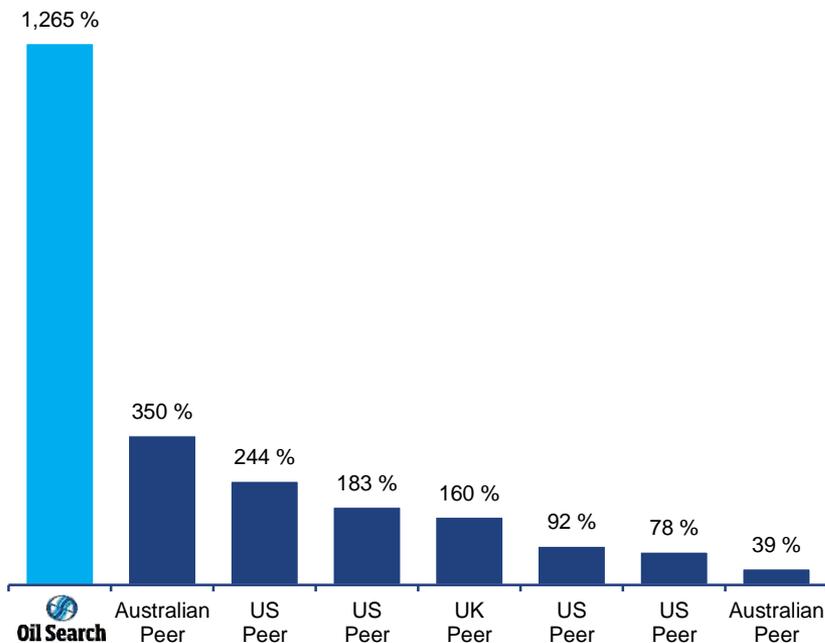
(1) Source IHSMarkit 2017  
 (2) Source USGS 2010/11

# OPPORTUNITY TO REPLICATE PNG'S SUCCESS

**Tier 1 assets, acquired at an attractive point of the cycle, with development and exploration growth & controllable expenditure**



## 15 YEAR TOTAL SHAREHOLDER RETURNS (%)<sup>(1)</sup>



- ◇ All of OSH's acquisitions have been strategic and successfully led to material value creation:
  - BP (1998) – enhance oil & gas position and align gas commercialisation strategy
  - Orogen (2002) – align PNG entities, enhance oil and gas equities and liquidity to support growth
  - Chevron (2003) – secure operatorship of oil fields, enhance production, align gas commercialisation strategy
  - PAC LNG (2013) – create opportunity to optimise PNG's LNG industry and secure interest in all projects
  - IOC (2016, did not complete) – successfully catalysed integration discussions between Papua LNG and PNG LNG owners
  - Armstrong/GMT (2017, proposed) – an operated Tier 1, world class oil asset acquired at an attractive point in the oil price cycle, with potential to be OSH's next PNG, underpinned by a staged investment profile

(1) As at 26 October 2017

# SUMMARY

## Alaska, when combined with PNG, provides a unique portfolio of Tier 1 assets with clear commercialisation paths

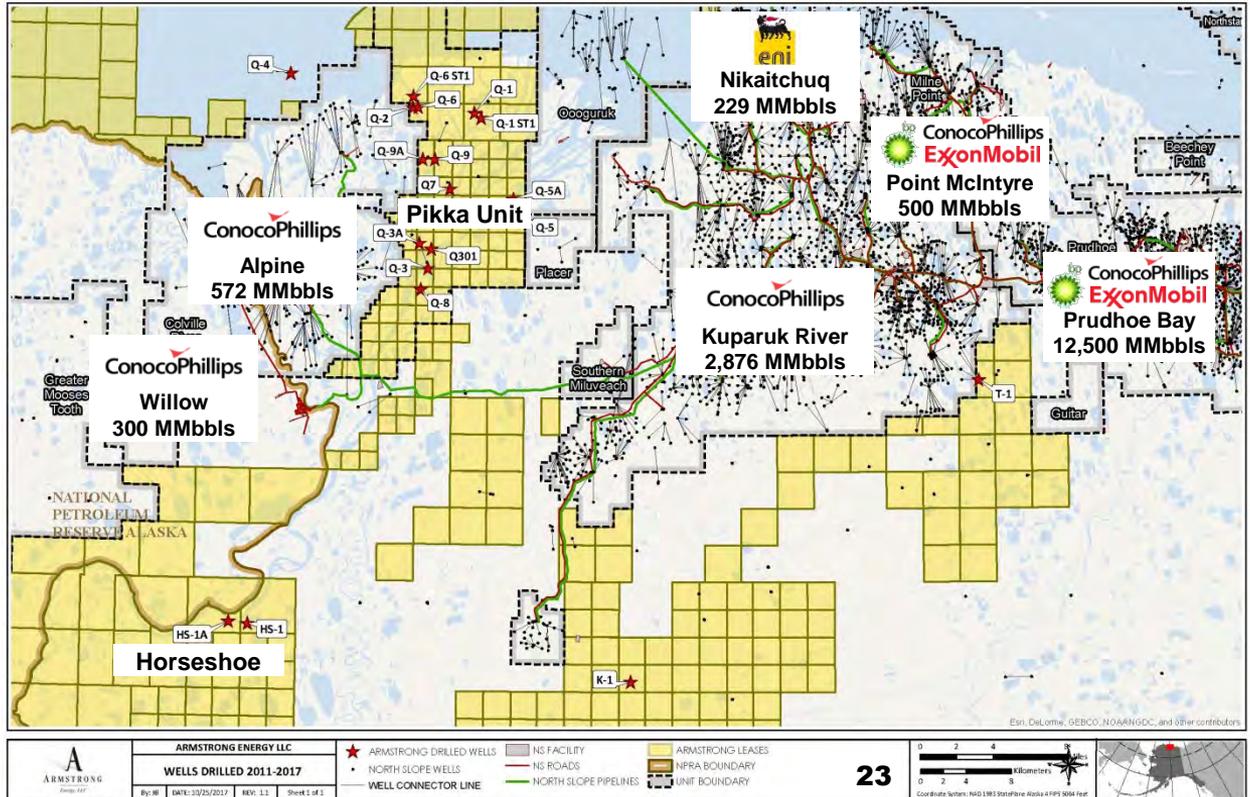
- ◆ **Combined with our world class PNG assets, the Alaskan acquisition provides OSH with an unprecedented platform for growth:**
  - Acquisition is highly complementary to OSH's low-cost, Tier 1 PNG portfolio
  - Low operating cost project acquired at a highly competitive price – US\$3.1/bbl under OSH's resource estimate and US\$1.3/bbl under Repsol's resource estimate<sup>(1)</sup>
  - Potential to add >125 mmbbls net to OSH booked resources
- ◆ **Able to control the commercialisation pathway and to leverage OSH's exploration and development capabilities:**
  - OSH will operate the appraisal and development, which will be of similar scale to OSH's operations in PNG
  - Armstrong will continue to provide support, with Halliburton, the largest service provider on the North Slope, providing assistance to build long term operating capability (analogous to relationship when OSH acquired Chevron's PNG assets in 2003)
- ◆ **OSH has a history of value-accretive M&A with long term strategic benefits:**
  - Very considered, focused and potentially material assets acquired at an attractive point in the oil price cycle
  - Fits with OSH's strategy of increasing oil exposure and building a best-in-class and focused portfolio
  - Acquisition, exploration, appraisal and development, as well as PNG expansion and exploration, can be funded from existing cash, cash flows and dedicated corporate facilities
- ◆ **No change to our ability or focus on delivering full value from our PNG portfolio and to our shareholders:**
  - Consistent with OSH's focus on delivering top quartile total shareholder returns over next 5 – 7 years
  - No near term requirement for any further new business. Focus on delivering full value from the Company's world class portfolio
  - No change in dividend policy planned

# APPENDIX



# ACREAGE POSITION

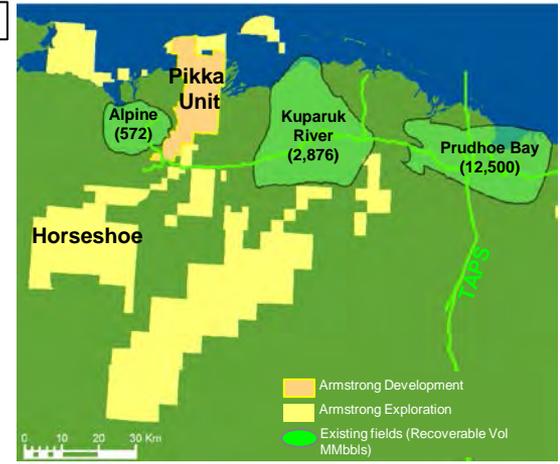
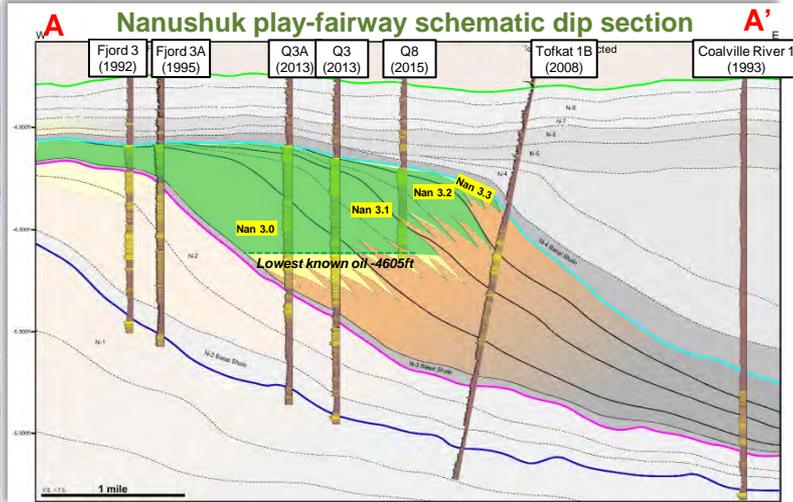
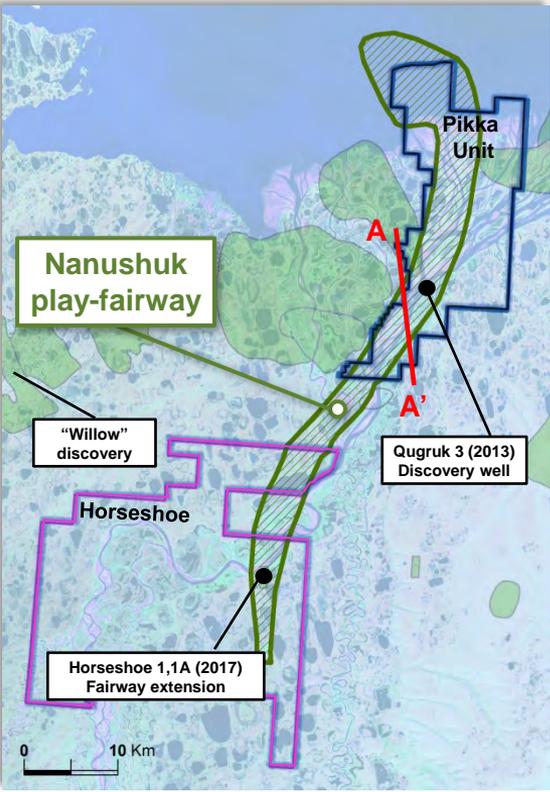
World class position in a proven basin adjacent to existing infrastructure with ullage<sup>(1)</sup>



(1) Source: Wood Mackenzie 2015/16

# NANUSHUK FIELD SUMMARY

Extensive 50+km long by 4 – 6km wide reservoir fairway covering approximately 200km<sup>2</sup>



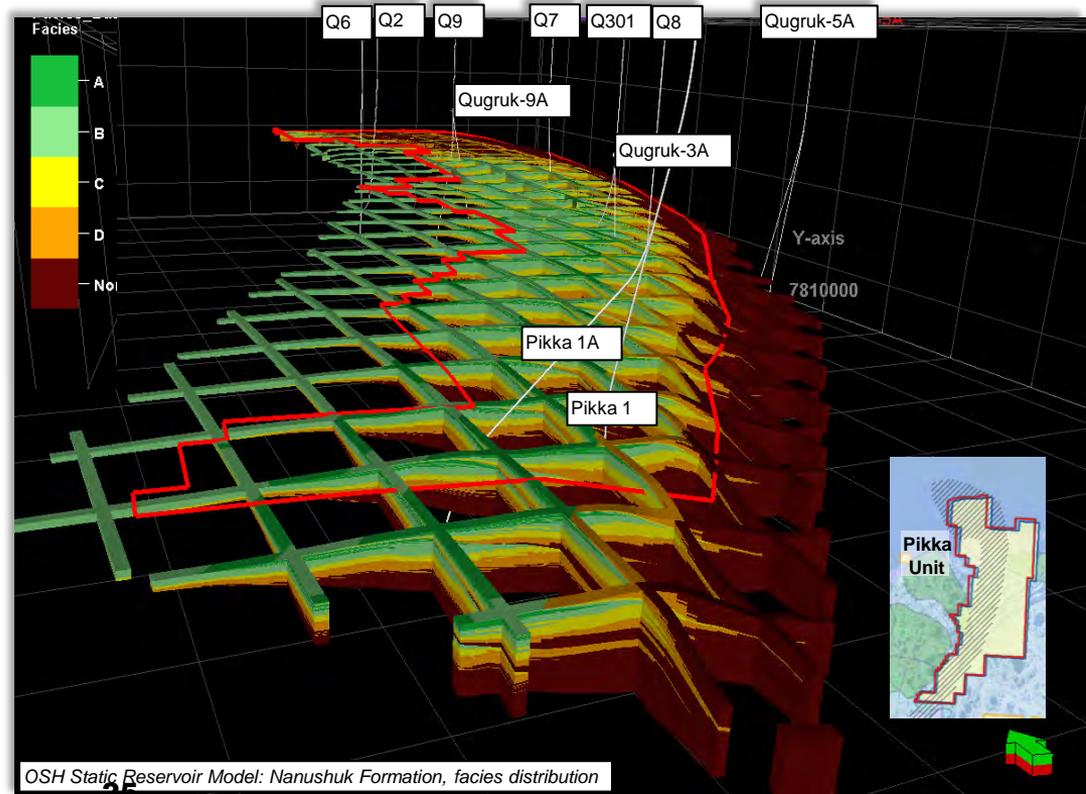
- ◆ Intersected by wells in 1995 but significance not recognised due to a lack of 3D seismic data
- ◆ Majors focused on nearby developments – not exploration
- ◆ Nanushuk fairway now defined by 3D seismic and drilling
- ◆ Fairway covers ~200km<sup>2</sup>, through adjacent Conoco acreage (additional wells scheduled for 2018)
- ◆ 2017 Horseshoe 1, 1A wells intersected extension on same pressure gradient as Pikka Unit
- ◆ 200m oil column across Nanushuk fairway – sweet crude oil (~30-35 deg API)

# PIKKA UNIT DEVELOPMENT

## Nanushuk main development but oil also discovered in three other reservoirs



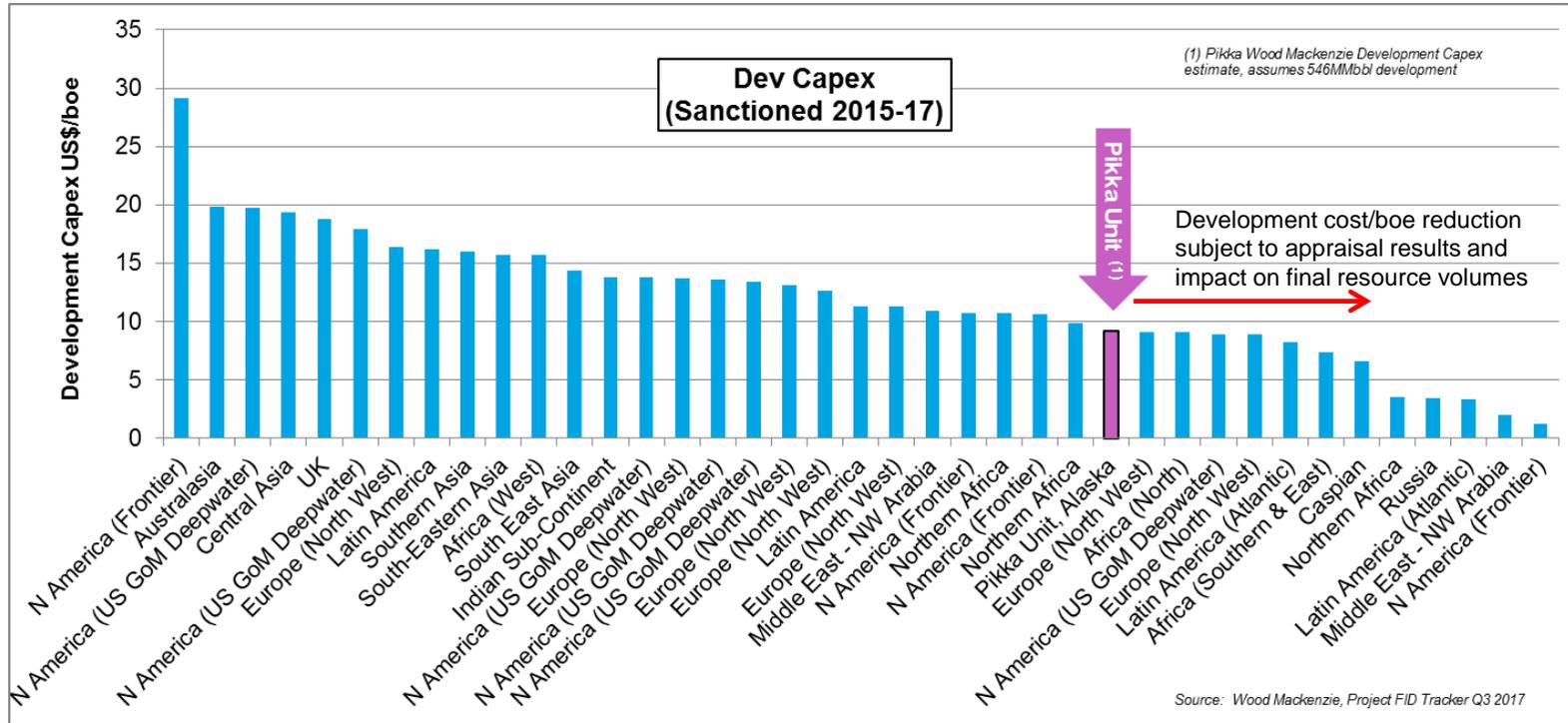
- ◆ Play-fairway delineated by 12 wells, 6 production tests and full modern 3D seismic data coverage
- ◆ Main accumulation within Nanushuk A & B facies
- ◆ Multiple additional pools and development options subject to further appraisal (Alpine, Kuparuk C reservoirs all recovered oil)
- ◆ Phase I development targeting 500 mmbbls<sup>(1)</sup> with a plateau of 80,000<sup>(1)</sup> – 120,000<sup>(2)</sup> bopd production gross
- ◆ Production from the Nanushuk will add potentially between 7.4 – 11.2 mmbbls per annum net to OSH, based on the initial development
- ◆ First production targeted 2023
- ◆ Development drilling from three well pads using long offset laterals to minimise surface impact and optimise production characteristics
- ◆ In-field pipelines to central processing facility (CPF) before export to TAPS and 1,300 km on to Valdez for export



(1) OSH estimate of gross resource for purposes of the acquisition; (2) Repsol press release of 9 March 2017

# 2015 – 2017 SANCTIONED DEVELOPMENT CAPEX

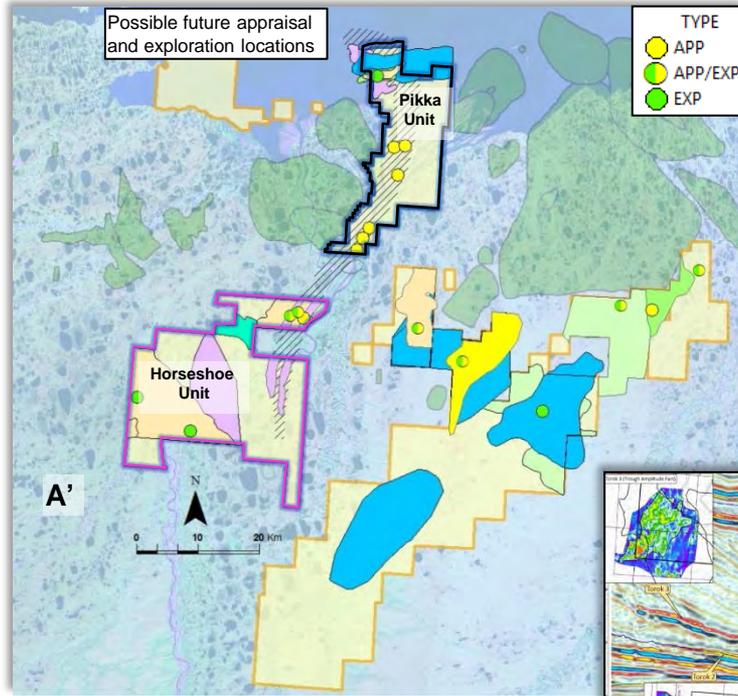
Wood Mackenzie 2017 estimates



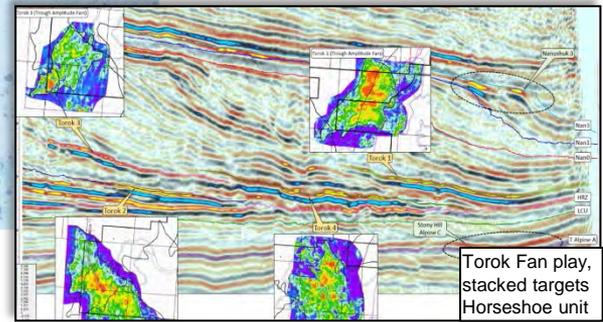
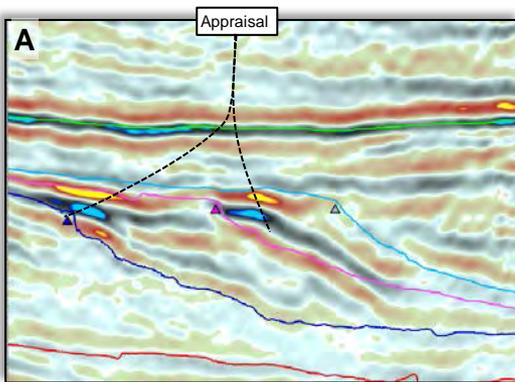
- ❖ Pikka Unit Nanushuk and satellite fields capex per bbl dependent on resources
- ❖ Current estimates US\$6 – 9/bbl including drilling, pipelines, roads and 26 GPF infrastructure, dependent on ultimate resource and development plan

# EXPLORATION

## Material appraisal and exploration upside



- Estimated 1.5 bnbbbls prospect portfolio outside Pikka Unit within existing leases
- Multiple play-types and proven fairways
- Includes both appraisal and exploration targets



# ENVIRONMENT

## Overview

Alaska North Slope in summer



- ◆ Most exploration and appraisal operations are undertaken during the winter to mitigate damage to the Tundra

Alaska North Slope in winter



- ◆ The average temperature on the North Slope +15° Celsius during the summer to -40° Celsius in winter
- ◆ Permafrost extends down to a depth of ~600m
- ◆ Year round road access via Dalton Highway and ice / gravel road network



- ◆ Once development pads are installed, drilling can take place all year round
- ◆ In the event of a development, all weather gravel roads and drilling pads are constructed allowing operations to occur 12 months of the year

# ARMSTRONG ENERGY LLC

A proven Alaskan oil finder with a world class position



2003 Ooguruk Field 91 mmbbls



2004 Nikaitchuq Field 229 mmbbls



2013 "Pikka Unit" Nanushuk



2017 Horseshoe Nanushuk



- ◆ Armstrong is a private company established in Denver, Colorado, in 1985
- ◆ Armstrong entered the Alaska North Slope in 2002 and is currently second largest conventional lease holder
- ◆ Ooguruk Field discovered in 2003. farmed in Pioneer Natural Resources then sold remaining interest to ENI in 2005
- ◆ Nikaitchuq Field discovered in 2004. Sold to ENI 2005 and subsequently developed by ENI
- ◆ Nanushuk discovery made in the Pikka area in 2013 by Repsol on acreage assembled by Armstrong, largely from the 2008 & 2009 state-wide lease sales. Pikka area Nanushuk discovery extended 30km to SE to Horseshoe area in 2017

# ALASKA FISCAL REGIME

## Overview

- ◆ Alaska maintains a competitive fiscal regime with incentives for exploration, development and commercialisation of oil and gas projects
- ◆ Royalties, production tax, property tax and conservation surcharges apply based on relevant licence areas and production volumes
- ◆ Alaska's statutory income tax rate is 9.4% with relief for royalties, production tax, property tax and conservation surcharges
- ◆ The statutory US federal income tax rate is 35% with deductions available for state tax, production tax and other charges
- ◆ OSH estimates the government take of Pikka Unit (Phase 1) to be ~40% effective tax rate<sup>(1)</sup> including royalties, state and federal taxes and credits

*“Repsol makes the largest U.S. onshore discovery in 30 years.”*

*“The contingent resources currently identified in the Nanushuk play in Alaska amount to approximately 1.2 billion barrels of recoverable light oil.”*

Repsol press release, 9 Mar ‘17

*“This [reservoir characteristics] is old school, real porosity, real permeability.”*

*The Nanushuk prospect “has the potential to be significantly more, possibly double” the 1.2bnbbbls of established recoverable reserves.”*

Bill Armstrong, founder and CEO of Armstrong Energy LLC, interview with Alaska Journal of Commerce, 13 Mar ‘17



## NEWS RELEASE

January 13, 2017

### **ConocoPhillips Announces Willow Discovery in National Petroleum Reserve**

ANCHORAGE, Alaska – ConocoPhillips Alaska Inc. today announced a new oil discovery in the Greater Mooses Tooth (GMT) Unit located in the northeast portion of the National Petroleum Reserve – Alaska (NPRA). The Willow discovery wells, Tiŋmiaq 2 and 6, were drilled in early 2016 and encountered 72 feet and 42 feet of net pay, respectively, in the Brookian Nanushuk formation. ConocoPhillips has a 78 percent working interest in the discovery and Anadarko Petroleum Corporation holds a 22 percent interest.

The two discovery wells are located about 28 miles west of the Alpine Central Facility, and are located approximately four miles apart. The Tiŋmiaq 2 well was tested and established good reservoir deliverability with a sustained 12-hour test rate of 3,200 barrels of oil per day of 44-degree API oil. Initial technical estimates indicate the discovery could have recoverable resource potential in excess of 300 million barrels of oil. Appraisal of the discovery will commence in January 2017 with the acquisition of state-of-the-art 3D seismic. Subject to appraisal results and the choice of development scenario, Willow could produce up to 100,000 barrels of oil per day (BOPD). Assuming timely permit approvals and competitive project economics, initial commercial production could occur as early as 2023.

“This discovery is tremendously exciting not only for ConocoPhillips, but also for the state of Alaska,” said Joe Marushack, president of ConocoPhillips Alaska. “Willow’s proximity to existing infrastructure improves the economic viability of the discovery. Development of Willow, a potential multi-billion-dollar investment, could provide thousands of jobs during construction and could generate substantial revenue for the federal government, state, North Slope Borough, and communities in the NPRA.”

In a follow-up to the Willow discovery, ConocoPhillips and its bidding partner, Anadarko, were successful in December’s federal lease sale on the western North Slope, winning 65 tracts for a total of 594,972 gross acres. ConocoPhillips independently was successful in December’s state lease sale on the western North Slope, winning 74 tracts for a total of 142,280 gross acres.

“The Willow discovery adds to our history of exploration success in the NPRA and is consistent with our focused global exploration strategy,” commented Richard Lunam, president of Exploration, Business Development and Other International for ConocoPhillips. “The acreage acquired in the recent state and federal lease sales gives us running room to test the concepts that led to Willow and other NPRA discoveries.”

Besides exploration activities, ConocoPhillips continues to make substantial investments in new projects on the North Slope. In 2016, the company approved additional drilling at CD5, contracted with Doyon Drilling for a new-build extended reach drilling rig, and commissioned two new rigs for the Kuparuk River Unit. This winter, construction will begin at GMT1, a drill site eight miles west of CD5. The cost to develop GMT1 is approximately \$900 million gross with peak production estimated at 30,000 BOPD gross. First oil is planned for late 2018. In addition, permits have been filed for GMT2, located about eight miles west of GMT1. GMT2 is estimated to cost more than \$1 billion gross with

peak production estimated at 25,000 to 30,000 BOPD gross. A seismic survey over GMT2 and Willow is also planned in the first quarter of 2017. First oil for GMT2 is dependent upon the time to acquire federal permits, but is anticipated to be 2020 or 2021.

The GMT Unit is operated by ConocoPhillips Alaska, Inc. (78 percent interest). Anadarko Petroleum Company (NYSE: APC) holds a 22 percent interest.

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### **About ConocoPhillips Alaska**

ConocoPhillips has been leading the search for energy in Alaska for more than 50 years. We are committed to responsibly developing Alaska's resources, providing economic opportunity for Alaska, operating at the highest safety standards and being good stewards of our community. For more information, visit [www.conocophillipsalaska.com](http://www.conocophillipsalaska.com).

Follow us on Facebook (<https://www.facebook.com/conocophillips>) and Twitter (@COP\_Alaska) for North Slope project updates and activities.

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### **CAUTIONARY STATEMENT FOR THE PURPOSES OF THE "SAFE HARBOR" PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995**

*This news release contains forward-looking statements. Forward-looking statements relate to future events and anticipated results of operations, business strategies, and other aspects of our operations or operating results. In many cases you can identify forward-looking statements by terminology such as "anticipate," "estimate," "believe," "continue," "could," "intend," "may," "plan," "potential," "predict," "should," "will," "expect," "objective," "projection," "forecast," "goal," "guidance," "outlook," "effort," "target" and other similar words. However, the absence of these words does not mean that the statements are not forward-looking. Where, in any forward-looking statement, the company expresses an expectation or belief as to future results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, there can be no assurance that such expectation or belief will result or be achieved. The actual results of operations can and will be affected by a variety of risks and other matters including, but not limited to, changes in commodity prices; changes in expected levels of oil and gas reserves or production; operating hazards, drilling risks, unsuccessful exploratory activities; difficulties in developing new products and manufacturing processes; unexpected cost increases; international monetary conditions; potential liability for remedial actions under existing or future environmental regulations; potential liability resulting from pending or future litigation; limited access to capital or significantly higher cost of capital related to illiquidity or uncertainty in the domestic or international financial markets; and general domestic and international economic and political conditions; as well as changes in tax, environmental and other laws applicable to our business. Other factors that could cause actual results to differ materially from those described in the forward-looking statements include other economic, business, competitive and/or regulatory factors affecting our business generally as set forth in our filings with the Securities and Exchange Commission. Unless legally required, ConocoPhillips undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.*

####

## NEWS RELEASE

July 16, 2018

### **ConocoPhillips Provides Strong Outlook for its Alaska Business; Announces Discovered Resource of 0.5 – 1.1 Billion Barrels Gross from Recent Exploration Activity with 75 Percent of Prospective Acreage Yet to be Drilled**

**HOUSTON** – ConocoPhillips (NYSE: COP) today provided an update on its operating plan for Alaska, focusing on the company's long history of creating value in the state and an ongoing commitment to invest in low cost of supply opportunities. Over the past few years, the company's Alaska business has undergone a significant transformation, driven by a more competitive fiscal framework, cost reductions, technological advancements and an exploration renaissance.

Highlights include:

- An outlook for continued investment and growth from investments in legacy assets and development of exploration success;
- Captured net resource of 2.0 billion barrels of oil equivalent (BBOE) of less than \$40 per barrel cost of supply resource in legacy assets;
- Captured 0.5 – 1.1 BBOE of additional gross discovered resource associated with the exploration program in Alaska since 2016, with 75 percent of the play still undrilled; and
- Strong realizations driven by premium ANS-priced oil.

The company's legacy asset base consists of a non-operated interest in the Prudhoe Bay Field, an operated interest in the Kuparuk Field and an operated interest in the Alpine Field/Western North Slope assets. In 2018, the company acquired additional interest in the Alpine Field/Western North Slope assets and announced it has entered into an agreement to acquire additional interest in the Kuparuk Field (which is subject to regulatory and other approvals). On a pro-forma basis including the recent transactions, the company estimates 2018 production from its legacy assets would be approximately 225 thousand barrels of oil equivalent per day (MBOED).

Since 2016, ConocoPhillips has undertaken a significant and successful exploration program in Alaska. Based on the exploration results to date, the company believes it has captured 0.5 – 1.1 BBOE of gross discovered resource, with 75 percent of its prospective exploration acreage still to be drilled. The cost of supply of the new resource is estimated to be less than \$40 per barrel. The company has a 100 percent working interest in this resource.

In the Greater Willow Area, the company now estimates its 2016-2018 exploration and appraisal campaign has discovered 400-750 MMBOE of gross resource, with undrilled resource upside. The company believes this resource estimate is sufficient to justify developing the area with a stand-alone hub. Preliminarily, the company estimates first oil can be achieved by 2024-2025 for approximately \$2-3 billion spent over the course of four to five years after final investment decision. Once first oil is achieved, the company anticipates ramping quickly to full production. Thereafter, the company estimates that an additional \$2-3 billion of cumulative drilling capital will be executed over multiple years to maintain production at this facility. Efforts are underway to analyze and evaluate results from the 2018 appraisal season in order to advance development planning and future appraisal needs.

In addition to exploration in the Greater Willow Area, the 2018 exploration campaign included the drilling, coring and flow testing of the Putu and Stony Hill wells in the Narwhal trend south of Alpine. Additional appraisal is required for both discoveries, but current discovered resource is estimated to be between 100 and 350 MMBOE gross. The company also has a 100 percent working interest in this resource.

The company expects another active exploration and appraisal season in 2019.

"We believe that the company's Alaska plan aligns with our disciplined, returns-focused strategy, supports Alaska's economy and creates significant value for shareholders," said Ryan Lance, chairman and chief executive officer. "Alaska provides competitive investment opportunities and will generate profitable growth from diversified investments with significant exploration upside. We are proud of the value we create for the State of Alaska through the revenues we generate, the jobs we create and the community investments we make. Our shareholders realize the advantages of ANS-priced oil, competitive cash and earnings margins from our operations and our years of expertise and sound stewardship. We plan to continue to strive to safely unlock the energy potential of this world-class oil province for years to come and play an active role in Alaska's economic future."

More information on the company's Alaska outlook is available through an investor presentation on the ConocoPhillips Investor Relations site, [www.conocophillips.com/investor](http://www.conocophillips.com/investor).

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## **About ConocoPhillips**

ConocoPhillips is the world's largest independent E&P company based on production and proved reserves. Headquartered in Houston, Texas, ConocoPhillips had operations and activities in 17 countries, \$71 billion of total assets, and approximately 11,200 employees as of March 31, 2018. Production excluding Libya averaged 1,224 MBOED for the three months ended March 31, 2018, and proved reserves were 5.0 billion BOE as of Dec. 31, 2017. For more information, go to [www.conocophillips.com](http://www.conocophillips.com).

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**Cautionary Note to U.S. Investors** – The SEC permits oil and gas companies, in their filings with the SEC, to disclose only proved, probable and possible reserves. We use the term "resource" in this release that the SEC's guidelines prohibit us from including in filings with the SEC. U.S. investors are urged to consider closely the oil and gas disclosures in our Form 10-K and other reports and filings with the SEC. Copies are available from the SEC and from the ConocoPhillips website.

*The release contains the terms cost of supply, resource and discovered resource. Cost of supply is the WTI equivalent price that generates a 10 percent after-tax return on a point-forward and fully burdened basis. Fully burdened includes capital infrastructure, foreign exchange, price-related inflation and G&A. Resource is based on Petroleum Resources Management System, developed by industry to classify recoverable hydrocarbons as commercial or sub-commercial to reflect their status at the time of reporting. The company's resource estimate includes volumes associated with both commercial and contingent categories. Discovered resource are known accumulations of quantities of oil and gas estimated to exist in naturally occurring accumulations.*

*Pro Forma figures are presented on the basis as if the Alpine Field/Western North Slope and Kuparuk transactions were completed on Jan. 1, 2018. The Kuparuk transaction is subject to regulatory and other approvals.*



## Press Release

For Immediate Release:

### **Caelus confirms large-scale discovery on the North Slope of Alaska**

*New find could deliver significant oil production, jobs and state revenue*

(Anchorage, AK - October 4, 2016) Caelus Energy Alaska, LLC announced Tuesday that its subsidiary, Caelus Energy Alaska Smith Bay LLC, has made a significant light oil discovery on its Smith Bay state leases on the North Slope of Alaska.

Based on two wells drilled in early 2016 as well as 126 square miles of existing 3D seismic, Caelus estimates the oil in place under the current leasehold to be 6 billion barrels. Furthermore, the Smith Bay fan complex may contain upwards of 10 billion barrels of oil in place when the adjoining acreage is included. Due to the favorable fluids contained in the reservoir, Caelus expects to achieve recovery factors in the range of 30-40%. Additional drilling and seismic should improve estimates of oil in place via delineation of undrilled fan lobes and channel complexes imaged on the original 3D seismic.

Caelus CEO Jim Musselman said: "This discovery could be really exciting for the State of Alaska. It has the size and scale to play a meaningful role in sustaining the Alaskan oil business over the next three or four decades. Fiscal stability going forward is critical for a project of this magnitude. Without the state tax credit programs, none of this would've happened, and I'm not sure Caelus would've come to explore in Alaska. We're proof that the credit programs work."

The Smith Bay development has the potential to provide 200,000 barrels per day of light, highly mobile oil which would both increase Trans-Alaska Pipeline System (TAPS) throughput volumes and reduce the average viscosity of oil in the pipeline, extending its long term viability.

The two exploration wells, Caelus-Tulimaniq #1 ("CT-1") and step-out Caelus-Tulimaniq #2 ("CT-2") targeted a large Brookian submarine fan complex spanning over 300 square miles. The fan was successfully drilled and logged in both wells, encountering an extension of the accumulation 5.25 miles northwest of the CT-1 discovery at the CT-2 location. Gross hydrocarbon columns in excess of 1,000 feet were encountered in each well; with CT-1 and CT-2 logging 183 and 223 feet of net pay, respectively. Neither well was flow tested due to seasonal time constraints, but extensive sidewall coring and subsequent lab analyses confirm the presence of reservoir-quality sandstones containing light oil ranging from 40-

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Caelus is currently planning an appraisal program which will include drilling an additional appraisal well and acquiring a new 3D seismic survey over outboard acreage. The appraisal program will enable Caelus to confirm reservoir continuity, optimize future drilling locations, and ultimately increase reserves. In parallel, Caelus is studying and planning the facilities build out which will process and transport the oil to TAPS.

### About Caelus Energy Alaska

Caelus Energy Alaska, LLC ("Caelus"), is a privately-held independent exploration and production company headquartered in Dallas with offices and operations in Alaska. Caelus is Operator of the Oooguruk Unit on Alaska's North Slope, and also holds a large portfolio of exploration acreage across the ANS region.

### About Caelus Energy Alaska Smith Bay

Caelus Energy Alaska Smith Bay is a 75 percent working interest owner in the State of Alaska oil leases at Smith Bay. Caelus indirectly owns 100% of the equity in Caelus Energy Alaska Smith Bay LLC, with Caelus Energy Alaska O3 LLC, a subsidiary of Caelus, indirectly owning 42% of the equity in Caelus Energy Smith Bay.

Caelus' partners in Smith Bay include NordAq Energy, Inc. (17.5% working interest) and L71 Resources, LLC (7.5% working interest).

### MEDIA CONTACT

Dani Myren, Media support

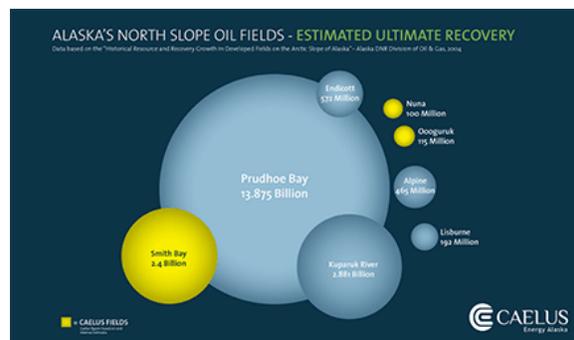
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For more information on Caelus Energy, Alaska LLC please click on the links below or visit our website at [www.caelusenergy.com](http://www.caelusenergy.com).

- [Caelus' Smith Bay Project is a World Class Discovery](#)
- [Caelus, North Slope Oil Fields Estimated Ultimate Recovery](#)
- [Caelus' North Slope Lease Holdings](#)
- [Caelus Energy Overview Fact Sheet – Our Future](#)



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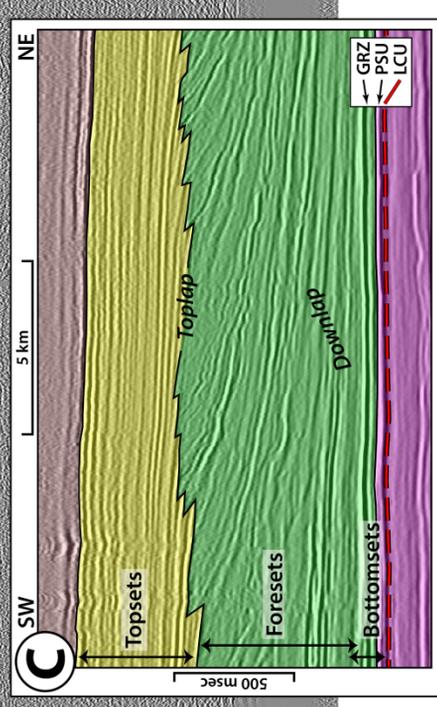
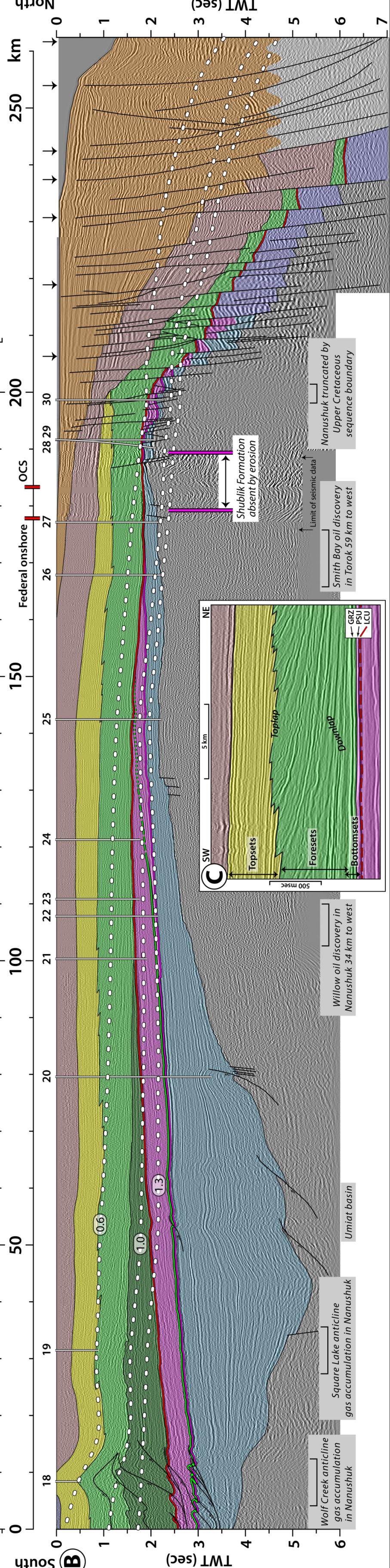
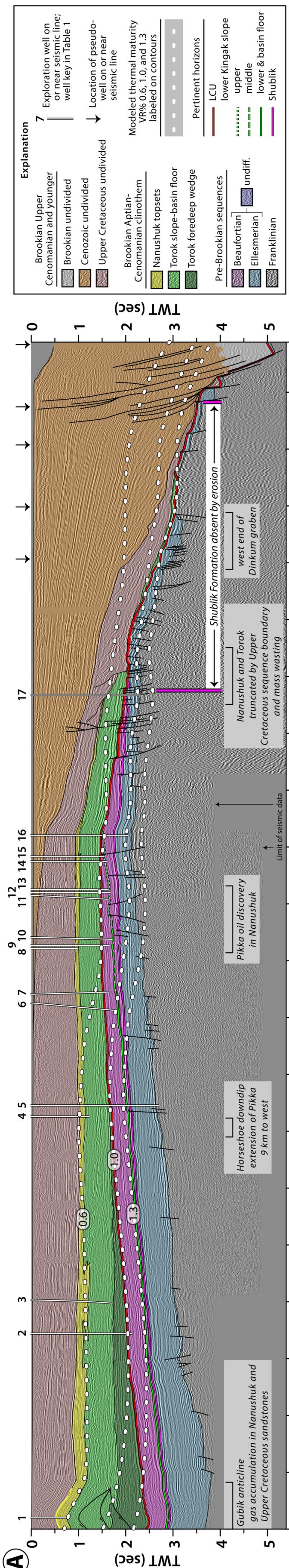
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Explanation	
Brookian Upper Cenomanian and younger	Exploration well on or near seismic line; well key in Table 1
Brookian undivided	
Cenozoic undivided	
Upper Cretaceous undivided	Location of pseudo-well on or near seismic line
Brookian Aptian-Cenomanian clinothem	Modeled thermal maturity VR% 0.6, 1.0, and 1.3 labeled on contours
Nanushuk topsets	
Torok slope-basin floor	
Torok foredeep wedge	
Pre-Brookian sequences	Pertinent horizons
Beaufortian	LCU
Eillesmerian	lower Kingak slope
Franklinian	upper
	middle
	lower & basin floor
	Shublik
	undiff.