

# PROJECT ICEWINE

NORTH SLOPE OF ALASKA



## PROJECT ICEWINE FEBRUARY 2017 ICEWINE#2 UPDATE



*Doyon Arctic Fox*  
**DOYON DRILLING, INC.**

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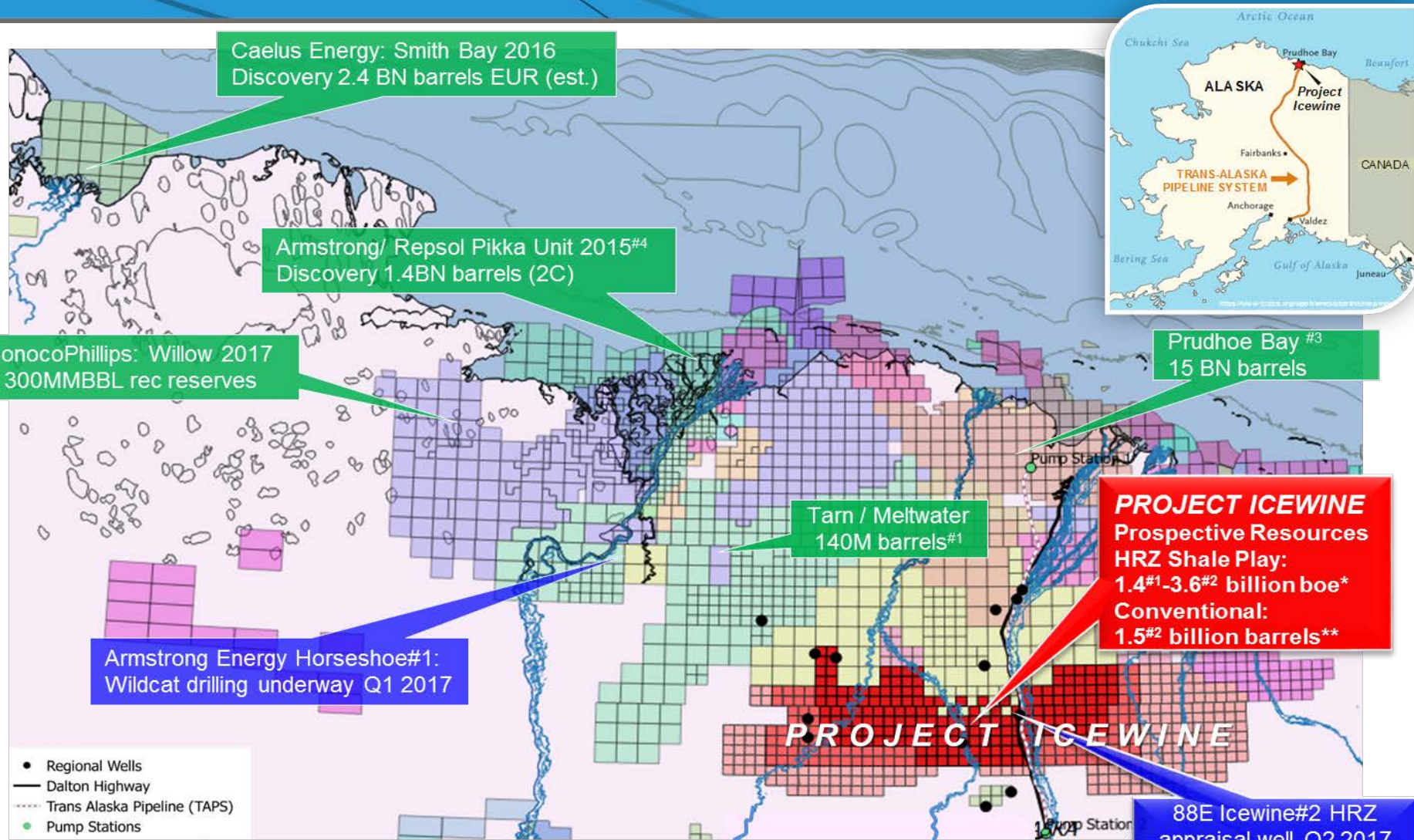
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Pursuant to the requirements of the ASX Listing Rules Chapter 5 and the AIM Rules for Companies, the technical information and resource reporting contained in this presentation are based on, and fairly represent, information and supporting documentation prepared by, or under the supervision of, Mr Brent Villemarette, who is a Non Executive Director of the Company. It has been produced for the Company, and at its request, for adoption by the Directors. Mr Villemarette has more than 30 years experience in the petroleum industry and is a qualified Reservoir Engineer who has sufficient experience that is relevant to the style and nature of the oil prospects under consideration and to the activities discussed in this document. He has consented to the inclusion of the petroleum prospective resource estimates prepared by DeGolyer & MacNaughton (as of 31 December 2015) and supporting information being included in this announcement in the form and context in which they are presented. His academic qualifications and industry memberships appear on the Company's website and both comply with the criteria for "Competence" under clauses 18-21 of the Valmin Code 2005. Terminology and standards adopted by the Society of Petroleum Engineers "Petroleum Resources Management System" have been applied in producing this document.

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# Project Icewine: World Class Location, World Class Prize



\* Gross mean prospective recoverable resource, refer ASX/AIM announcement 6/04/16 (271,119 acres)

\*\* Gross mean prospective recoverable resource, refer ASX/AIM announcement 13/01/17


#1 Independent Est., #2 Internal Est., #3 Source USGS 2005, #4 Armstrong 2016

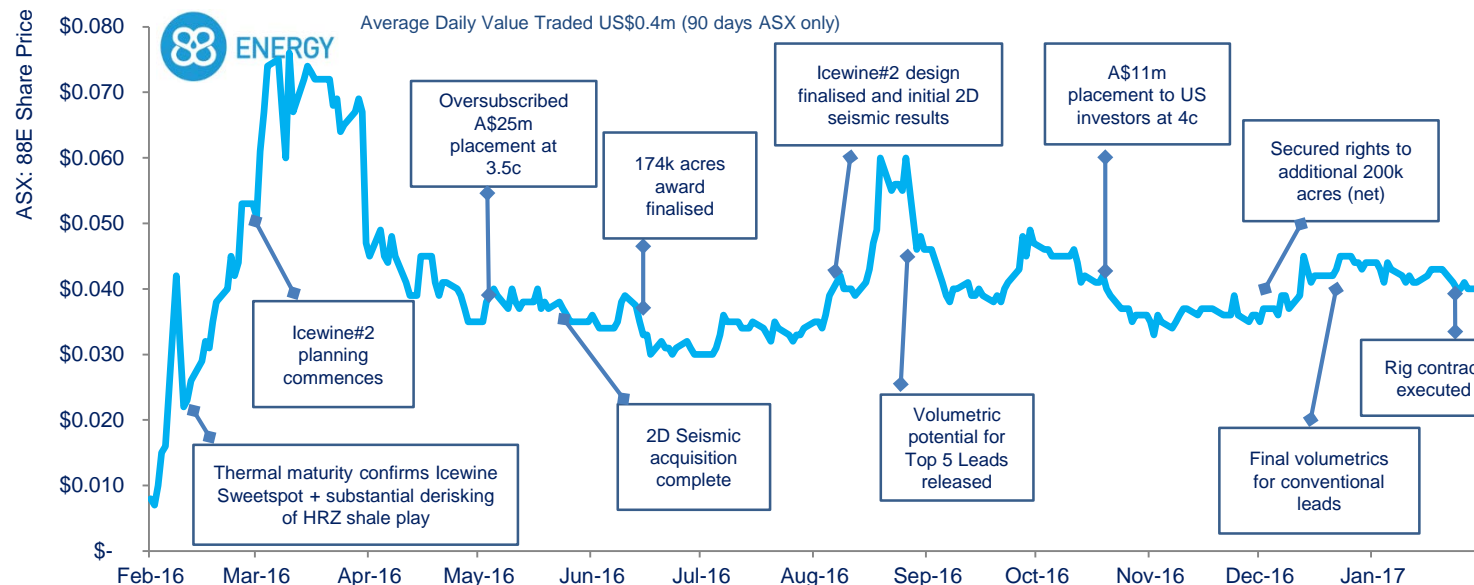
# Corporate Snapshot



88 Energy Limited (ASX, AIM: 88E)	Current
Shares on Issue	4,169m
Options on Issue	698m
Market Capitalization (A\$0.04)	US\$126m
Cash (audited 31 Dec 16)	US\$20m
Av. Daily Value Traded (90 days ASX/AIM)	US\$1.1m
Board and Top 20	58%
Project Icewine Operator, Working Interest	77.5%

88E Board and Management	
David Wall	Managing Director
Michael Evans	Non-Exec Chairman
Brent Villemarette	Non-Executive Director
Dr Stephen Staley	Non-Executive Director
Erik Opstad	General Manager, Alaska Operations
Elizabeth Pattillo	General Manager, Exploration
Ashley Gilbert	Chief Financial Officer

Burgundy Xploration JV Partner	
Paul M. Basinski, Founder & CEO	
Michael R. McFarlane, President	
Closely Held Texas LLC	
Special Purpose Vehicle for Project Icewine	
Project Icewine Working Interest 22.5%	



## Activity Planned

- Spud Icewine #2 vertical well – April 2017
- Stimulate and Production Test HRZ / HUE – mid 2017
- Progress maturation of drilling candidate from conventional leads – Q3 2017

## **Large, Strategic Acreage Position – Vast Majority of HRZ Play now Captured**

- Joint Venture now controls rights to 690,000 gross acres (~400,000 acres net to 88E\*, Operator)
- Strategically located on infrastructure – all year access road / pipeline

## **Primary Target: HRZ Liquids Rich Resource Play – 1.0-2.6 billion barrels liquids\*\***

- De-risked by core/log analysis from Icewine#1 corehole (2015/2016)
- Modelled breakeven oil price for success case <US\$40 per barrel

## **Drilling of Icewine#2 Appraisal Well Imminent – Production Test of HRZ Play**

- Rig contracted – Arctic Fox is a premier North Slope rig that will commence drilling Icewine#2 post completion of the Horseshoe#1 well (in progress)
- Estimated mobilization March / April 2017, with spud to follow shortly thereafter
- Flow results expected mid year, post stimulation

## **Large Conventional Leads Identified – 1.5 billion barrels\*\***

- Based on 750km of modern 2D seismic (2015/2016)
- Maturation of leads into potential drilling candidates underway

\* ~400,000 acres net to 88E assuming all rights taken up – 210,000 net acres currently under award

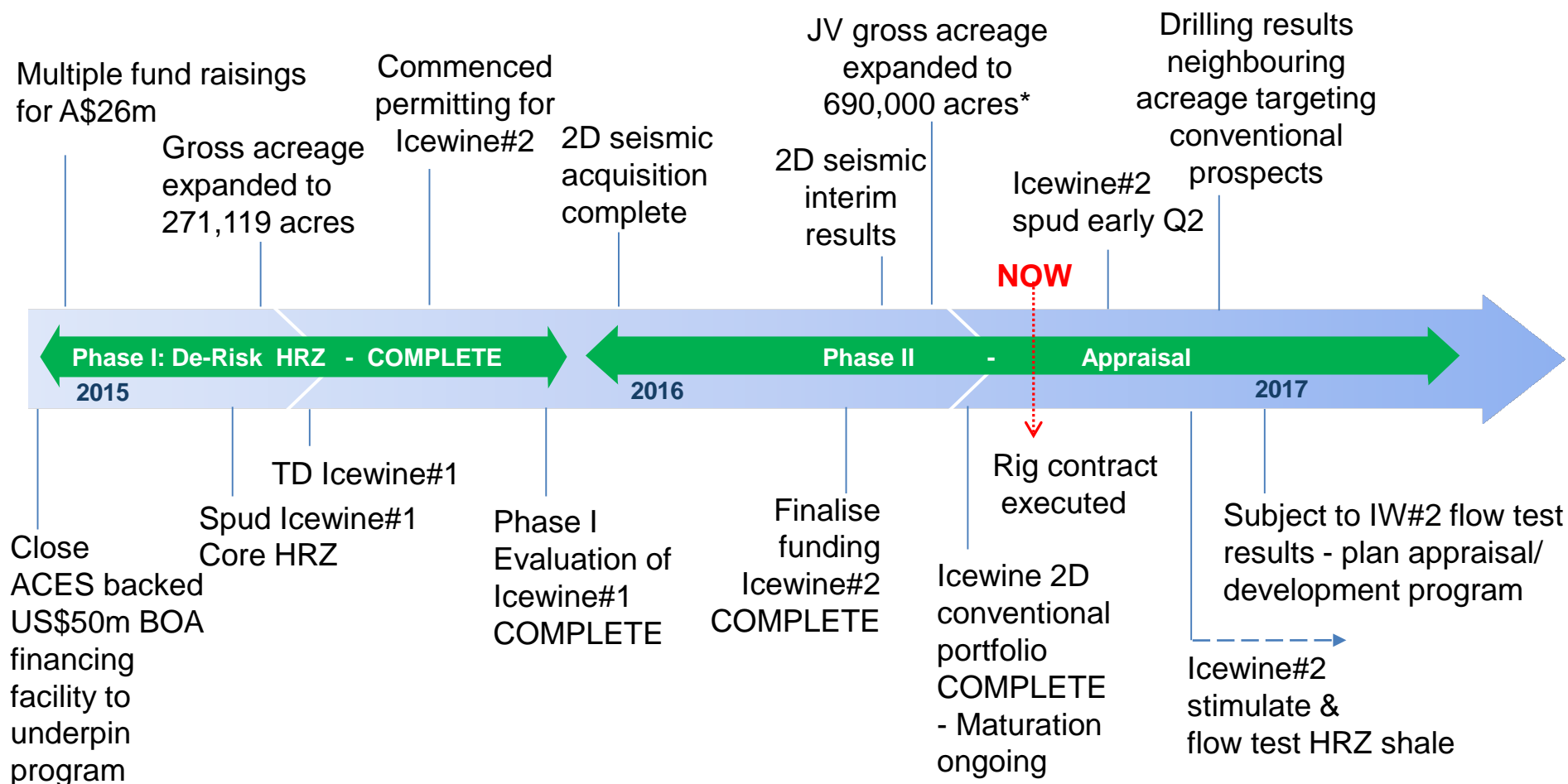
\*\* Gross Mean Prospective Recoverable Resource based on 271,000 acres (see Appendix for full details)

# Project Icewine Timeline



## Phase I De-Risking Complete Successful Evaluation of HRZ

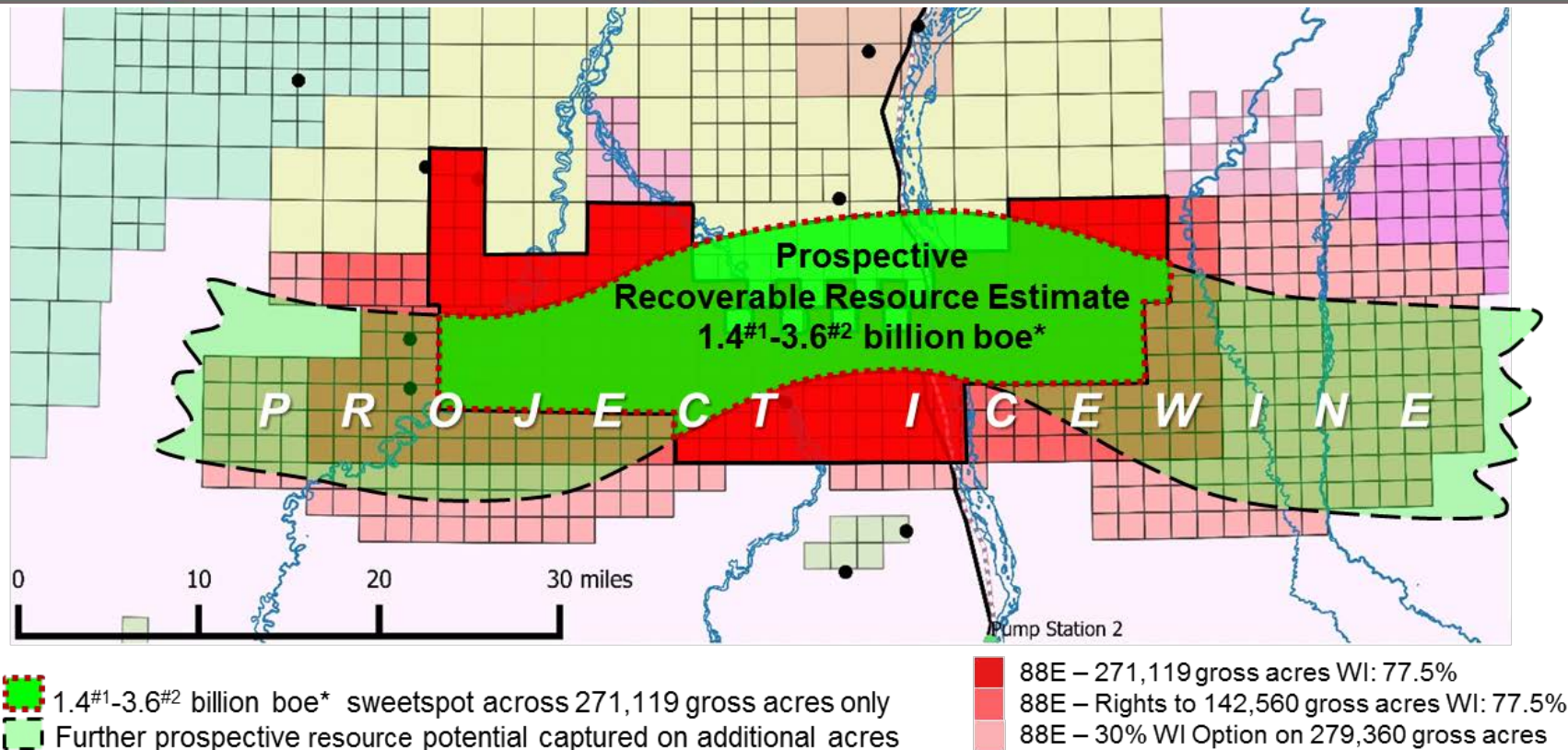
## Phase II Appraisal Icewine#2 - Stimulate & Flow Test Q2-Q3 2017



\* ~400,000 acres net to 88e assuming all rights taken up



# HRZ Unconventional: Volatile Oil Sweetspot Mapping



- Increased confidence of HRZ sweetspot based on thermal maturity, porosity, permeability, pressure and resource concentration
  - Drove decision to lease substantial additional acres in November 2016
- Proof of HRZ producibility to be determined by Icewine#2
- JV now has rights to largest contiguous landholding on the world class North Slope of Alaska

\* Gross mean prospective recoverable resource, refer ASX/AIM announcement 6/04/16 (271,119 acres)  
Ref: Estimates #1 Independent, #2 Internal



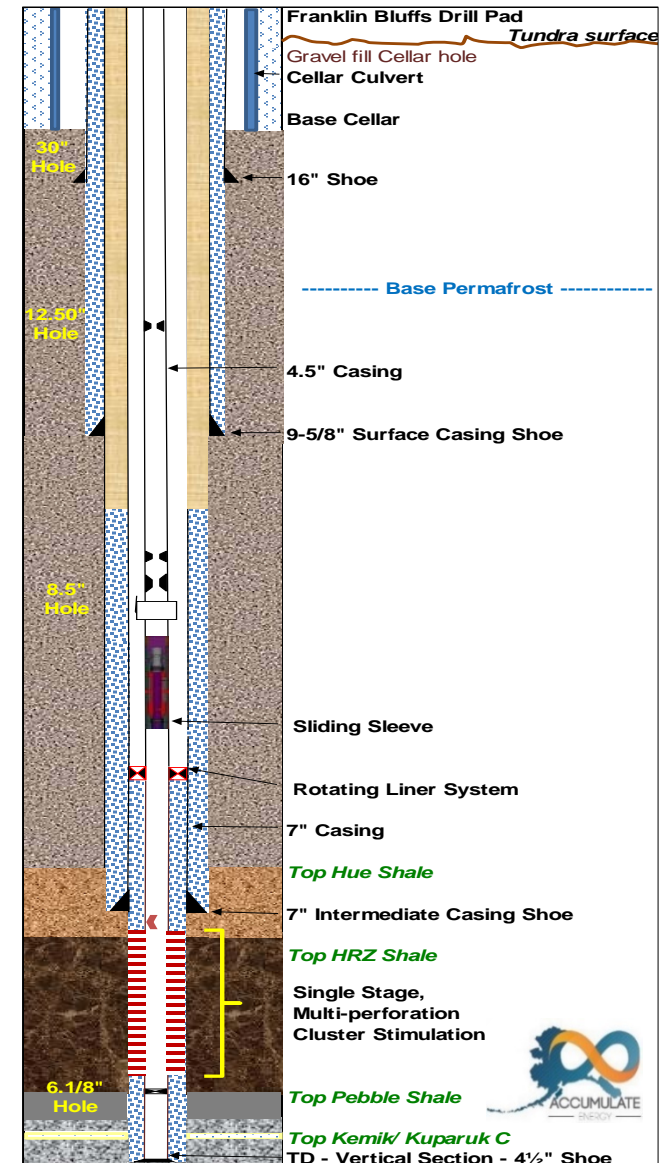
# HRZ Unconventional: Phase II

## Icewine#2 Vertical Well, Stimulate & Flow Test



- **Icewine#2 Overview – Spud Early Q2 2017**

- Single stage, multi-perforation cluster stimulation and production test over 160' interval (HRZ and basal Hue Shale)
  - Estimated 30-45 days to drill, log and conduct micro stimulation
  - Main stimulation will then be refined over 1-2 week period before execution
  - Flow test results expected mid 2017
- All major permits secured as planned
  - Permit To Drill being finalised & on track
- Well cost estimated at US\$17.7m\* (net US\$14m)
  - 88E funded from current cash position (US\$20m) for Icewine#2
- Franklin Bluffs Pad location – year round access via Dalton Highway

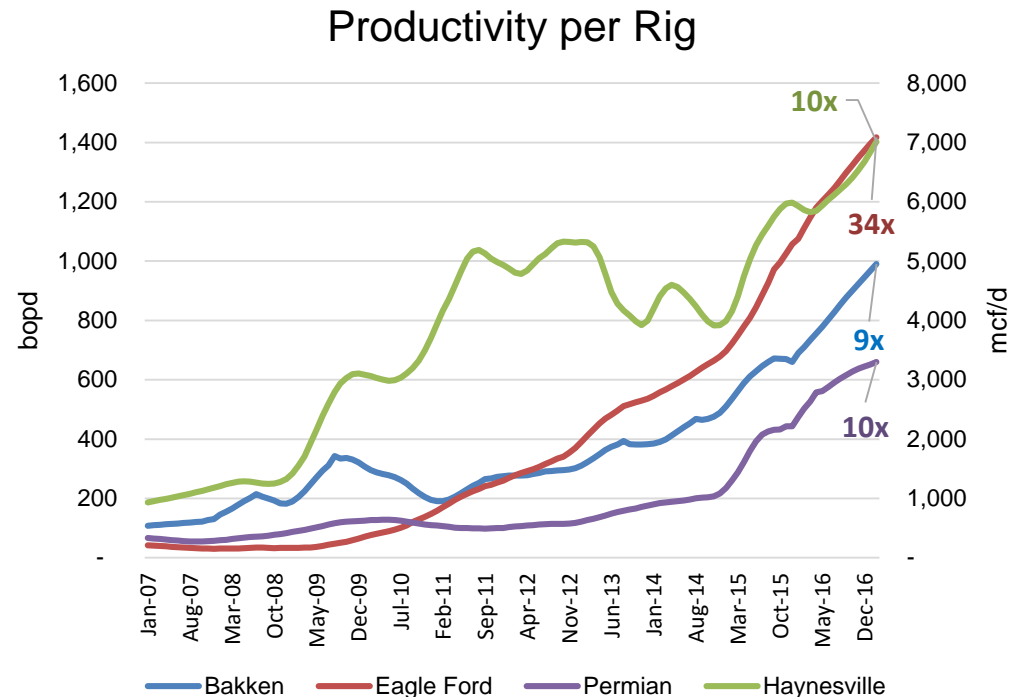


\* includes 15% contingency, fully completed with production test

# HRZ Unconventional: Well Performance Analogues



- Typical performance for vertical phase of shale exploration / appraisal => 80-150bopd initial production
- Historic uplift average 10-30x as play evolves from vertical to horizontal development
- Project Icewine JV aim is to leverage the learning curve to accelerate optimisation of HRZ productivity

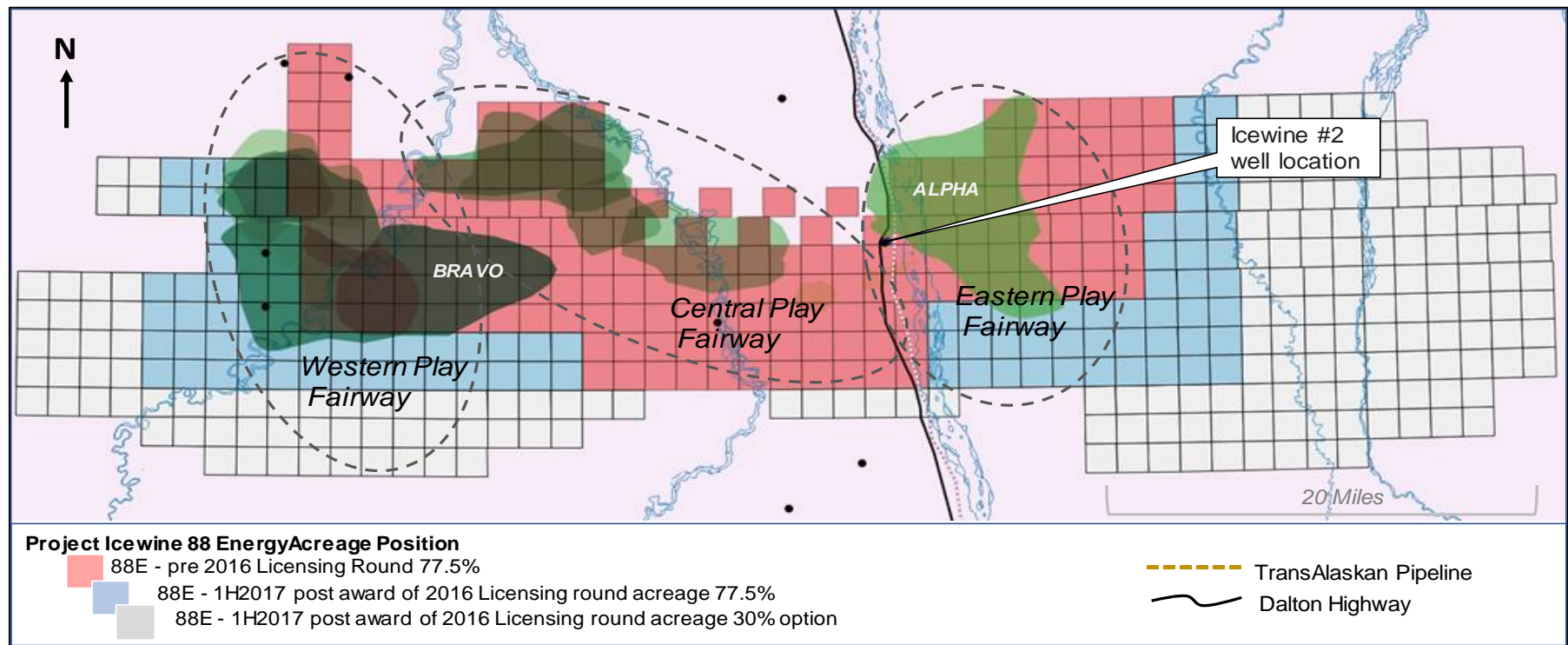


Source: EIA Drilling Productivity Report 17 Jan 2017

NOTE:

Bakken, Permian and Haynesville already partway through evolution from vertical to horizontal wells by 2007 so uplift multiple from inception of play to current day is understated

# Project Icewine Conventional Prospectivity Portfolio



- Conventional Prospective Resource Potential (mean unrisked) :
  - 1.47 BN barrels gross; 1.14 BN net to 88E \*
- Leads predominantly stratigraphic, slope apron, turbidites & basin floor fan systems
- Prospective areas high graded across acreage:
  - Eastern Play Fairway - advantaged by close proximity to transportation corridor
  - Western & Central Play Fairways - opportunity to test stacked multiple objectives with one well
- Central North Slope ranked #1 in the US for remaining conventional oil potential (majority in same sequence targeted by 88E)

\* Refer ASX/ AIM announcement 13/01/2017 11

# Project Icewine Conventional Portfolio: Prospective Oil Resources- Unrisked Recoverable



PROJECT ICEWINE CONVENTIONAL LEAD SUMMARY Prospective Oil Resources - Unrisked Recoverable - MMBO					
Lead	Low	Best	High	Gross Mean	Net Mean to 88E (WI: 77.5%)
<i>Eastern Play Fairway</i>					
Alpha	19	71	263	118	91
Romeo	2.1	3.4	5.3	3.6	2.8
Sierra	1.1	2.0	3.4	2.2	1.7
<i>Central Play Fairway</i>					
Golf	60	115	210	128	99
Hotel	10	18	31	19.8	15.3
India	61	116	212	129	100
Juliet	52	99	181	110	85
<i>Western Play Fairway</i>					
Bravo	129	245	449	273	212
Oscar	14.5	26.6	47	29.2	22.6
Papa	7.6	13.9	24.6	15.3	11.9
Charlie*	147	257	432	277	215
Delta*	74.7	131	219	141	109
Foxtrot*	40.9	71.5	120	77	60
Mike*	50	87.5	147	94	73
November*	24.8	45.6	80.4	50.1	39
<b>FINAL TOTAL</b>				<b>1,468</b>	<b>1,137</b>

- Leads predominantly stratigraphic
- Alpha and Bravo Leads prominent given mapped seismic geometries and relief
- Stacked leads offer opportunity to test multiple objectives

Prospective Resources classified in accordance with SPE-PRMS as at 13<sup>th</sup> January 2017 using probabilistic and deterministic methods on an unrisked basis. Leads identified from interpretation of modern 2D seismic acquired in 2015/2016 across Project Icewine, which comprises 271,119\*\* gross acres on the Central North Slope of Alaska. 88 Energy is Operator of record at Project Icewine (through its wholly owned subsidiary Accumulate Energy Alaska, Inc) with a 77.5% working interest.

Cautionary Statement: The estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation are required to determine the existence of a significant quantity of potentially movable hydrocarbons.

\* Conceptual leads extend into previously open acreage to the west of Project Icewine, which was successfully bid on by 88 Energy in the recent State of Alaska Licensing round, December 2016. Currently delineated on Icewine 2D seismic data and extending onto sparse vintage 2D. Further technical work is required to define the full potential of the Western Play Fairway conceptual leads.

\*\* An additional ~420,000 gross acres (~190,000 net to 88E) is subject to formal award, expected in 2017



## **Mr David Wall – Managing Director**

4 years experience in strategy and planning at Woodside Petroleum. 6 years experience in financial services industry as small cap oil and gas equities analyst, specialising in exploration companies.

*B. Comm in Management and Finance from University of Western Australia.*

## **Mr Michael Evans – Non-Executive Chairman**

Extensive executive and Board level experience with publicly listed companies in the natural resources sector spanning 30 years.

Founding Executive Chairman of ASX oil and gas explorer FAR Limited and was responsible for FAR's entire West African portfolio where significant oil discoveries were made in 2014.

*B Bus Curtin University, Chartered Accountant, Chartered Secretary, Governance Institute Australia*

## **Erik Opstad – General Manager Alaska Operations**

37 years of energy project management and technical experience including with BP in Alaska, conducting both offshore and onshore operations. Mr. Opstad joined the 88 Energy team from Savant Alaska where as a principal in the company he served as Drilling & Wells Manager and General Manager driving geoscience and engineering redevelopment activities at the Badami oilfield on the North Slope of Alaska. *Erik holds a BSc and MSc in Geology from the University of Iowa.*

## **Dr Stephen Staley – Non-Executive Director**

30 years of energy management and technical experience including with Conoco and BP. Dr Staley was founding Managing Director of upstream AIM start-ups Fastnet Oil & Gas plc and Independent Resources plc and a Non-executive Director of Cove Energy plc. *BSc (Hons.) in Geophysics from Edinburgh University, PhD in Petroleum Geology from Sheffield University and MBA from Warwick University.*

## **Mr Brent Villemarette – Non-Executive Director**

Over 35 years experience in the global oil and gas industry, primarily with Apache Corporation in the US and in Australia. Also served as Chief Operating Officer for Transerv Energy, an ASX listed oil and gas company. *BSc in Petroleum Engineering from Louisiana State University. Reservoir Engineer.*

## **Ms Elizabeth Pattillo – General Manager Exploration**

Over 20 years experience in the upstream petroleum industry both with major international oil and gas companies, (BHP Petroleum Pty Ltd, Shell UK Exploration & Production), and junior explorers. *BSc (Hons) in Geology, Monash University Australia; Post Graduate Diploma in Education University of Western Australia*

## **Mr Ashley Gilbert – Chief Financial Officer**

Over 20 years' experience in commerce and public practice. Prior roles include CFO of Neptune Marine Services and Nido Petroleum, as well as positions within Woodside Petroleum and GlaxoSmithKline plc. in London. *B.Comm Curtin University, Chartered Accountant, Governance Institute Australia, Institute of Company Directors GAICD*

## Managing Director:

David Wall  
[dwall@88energy.com](mailto:dwall@88energy.com)

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**ASX: Computershare**  
Investor Services Pty Ltd  
ASX: 88E

**AIM: Computershare**  
Investor Services Pty Ltd  
AIM: 88E

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### United Kingdom

Cenkos Securities Plc As Nominated Adviser and Broker:  
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# APPENDIX



# HRZ Unconventional – What Makes a Top Tier Liquids-Rich Resource Play?



## FLOW RATE IS KEY DRIVER—AHEAD OF OIL PRICE AND COST

WHAT CHARACTERISTICS DETERMINE FLOW RATE? HOW DOES ICEWINE MEASURE UP TODAY?

### VISCOSITY

Measure of how easily hydrocarbon can travel through the reservoir

**Project Icewine: In thermal maturity sweetspot where liquid content is high but viscosity remains low (volatile oil)**



### PRESSURE

Reservoir energy that improves well performance

**Project Icewine: Estimated 40% higher than the hydrostatic gradient (ie overpressured)**



### PERMEABILITY

State of the reservoir which allows hydrocarbons to flow through it

**Project Icewine: Excellent permeability by comparison to other liquids-rich resource plays**



### HYDROCARBON PORE VOLUME

How much hydrocarbon is in place to be potentially accessed by a well bore

**Project Icewine: Good porosity, thickness and hydrocarbon saturation**





# HRZ Unconventional: PHASE I Formation Evaluation - COMPLETE



Metric (Unit)	Result	Comment / Comparison
Thermal Maturity	Volatile Oil	High rate, recovery, & performance
GRI Matrix Permeability	> Eagle Ford	Very good for volatile oil resource plays
Gross / Net Pay	197' / 186'	Tier 1 net to gross ratio of 94%
Effective Porosity	12.6%+	30%+ higher than Eagle Ford
TOC	3.7%+ (wt basis)	In line with highly commercial resource plays
Clay Content	38%	Analogous to Marcellus / Haynesville
Hydrocarbon Saturation	75%	Consistent with world class resource plays
Bottom Seal	Effective	Confines overpressure needed for volatile oil phase
Pore Pressure Gradient	40% above normal	Essential for commercial production

# HRZ Unconventional: Prospective Resource Assessment



## 2.6 Billion Barrels (Liquids Only) Gross Mean Prospective Recoverable Resource from HRZ

	P90	P50	P10	Mean	Pc <sup>#</sup>
<b>Gross Liquids Resource (mmbbl)</b>	<b>1,594</b>	<b>2,471</b>	<b>3,830</b>	<b>2,602</b>	<b>50%</b>
<b>Net Attributable to 88 Energy (mmbbl)</b>	<b>1,236</b>	<b>1,916</b>	<b>2,970</b>	<b>2,017</b>	<b>50%</b>

<sup>#</sup>Estimated Probability of Commercial Success – Company Estimate

- Independent assessment methodology largely consistent with 88 Energy estimates
- 88 Energy internal evaluation assumes higher percentage of acreage to be prospective
- 90% of liquids estimated in volatile oil window in Internal Assessment

Mean Comparison (gross)	D&M*	88E Internal**
Hydrocarbon In-Place, mmboe	10,308	21,093
Prospective Acreage for Development	114,056	176,656
Recoverable Resource, mmboe	1,359	3,607
% Liquids	72.5	72.1
RF, %	13.2	17.1
<b>Hydrocarbon Liquid Resource, mmbbl</b>	<b>985</b>	<b>2,602</b>

\* DeGolyer & MacNaughton 2016:

Prospective unrisked mean recoverable, calculated using probabilistic methods, 100% basis, gas converted to oil equivalent on a 6:1 ratio

\*\*Prospective unrisked mean recoverable, calculated using deterministic and probabilistic methods, 100% basis, gas converted to oil equivalent on a 6:1 ratio

*Cautionary Statement: The estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation are required to determine the existence of a significant quantity of potentially movable hydrocarbons. Refer ASX announcement on 6/4/16*

# HRZ Unconventional: Internal Project Economics#



- Cost Assumption based on Low-High cost scenarios
- Resource Case based on well performance type curves over P10-P90 prospective resource estimate
  - Icewine#2 designed to provide additional insight into future lateral well performance and narrow P10-P90 range of outcomes
  - Potential to increase resource estimates for both HRZ and HUE
  - Given already large resource potential, success at Icewine#2 could unlock significant value for shareholders
    - Majority of play already leased by Project Icewine Joint Venture

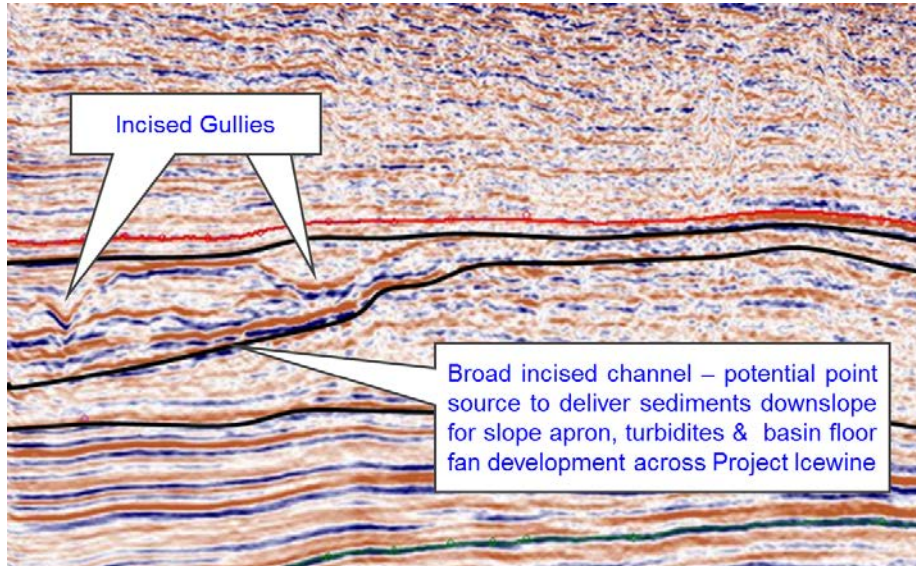
## Estimated Oil Prices Required for Continued Exploration and Development

	Cost Assumption		
Resource Case	High Costs	Mid Costs	Low Costs
P10	US\$44/bbl	US\$35/bbl	US\$27/bbl
P50	US\$49/bbl	US\$39/bbl	US\$29/bbl
P90	US\$68/bbl	US\$54/bbl	US\$41/bbl

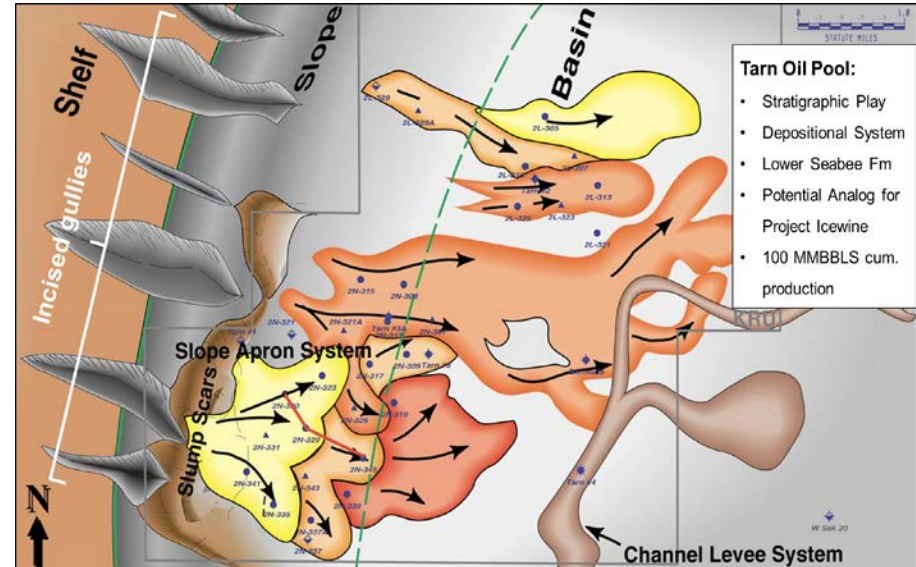
*#Based on Prospective Resource estimates, which are classified as undiscovered accumulations that carry associated risk of discovery as well as risk of development. See full disclaimer on Slide 10. Refer ASX announcement 6/4/2016.*

# Project Icewine Prospectivity

## Conventional Analog: Tarn Oil Pool



Project Icewine: N-S trending 2D seismic line with incised gullies/ feeder channel delivering sediments downslope to Western Play Fairway Leads



Tarn Depositional System (Annotated, after Helmold 2006)

- Project Icewine conventional prospectivity considered analogous to Tarn/ Meltwater stratigraphic play fairway within the Seabee Formation to the north
- Tarn Oil pool – part of the Kuparuk River Unit – produced in excess of 100+ MMBO
- Comprises stacked slope apron, turbidites, basin floor fan & channel levee deposits fed by incised gullies on shelf break to the west
- Similar seismic geometries and incised gullies mapped at Project Icewine
- Potential opportunity to test multiple stacked objectives with one well



# Project Icewine Conventional: Select Leads- Alpha – Eastern Play Fairway

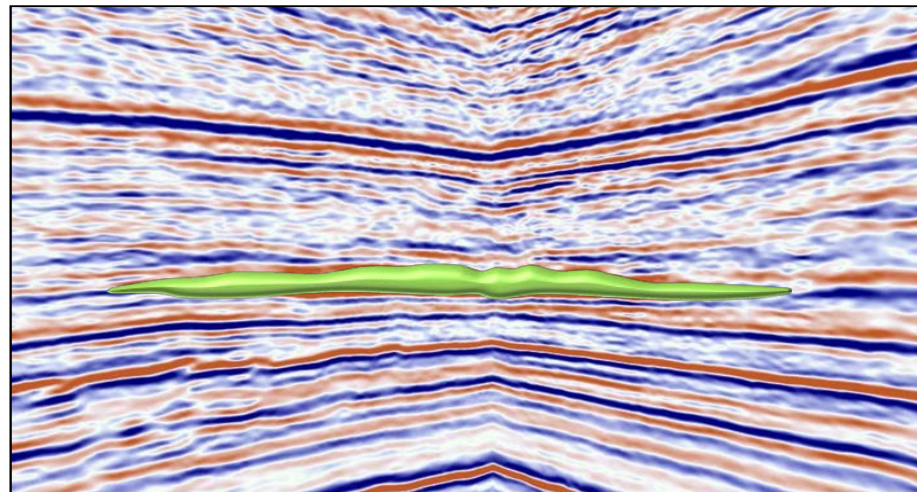


## Alpha

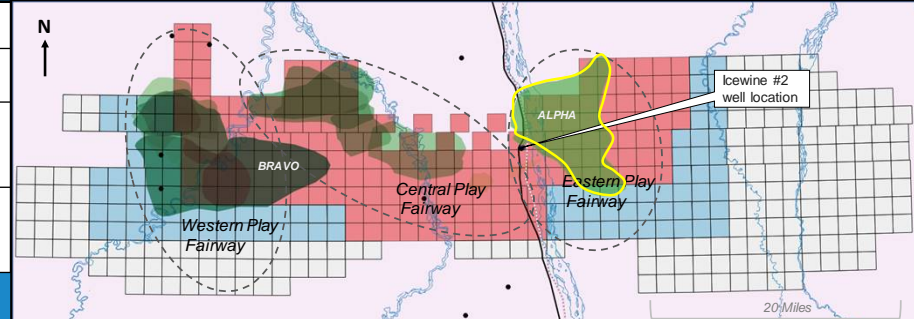
<b>Sequence</b>	Brookian
<b>Trap</b>	Stratigraphic pinchout to west and north
<b>Play</b>	Lobate toe of slope/ basal floor fan Working petroleum system
<b>Remarks</b>	Large areal extent with significant relief Located in close proximity to road and TAPS

## Prospective Oil Resources (mmbbl) Unrisked Recoverable

P90	P50	P10	Mean	Mean Net to 88E
19	71	263	118	91



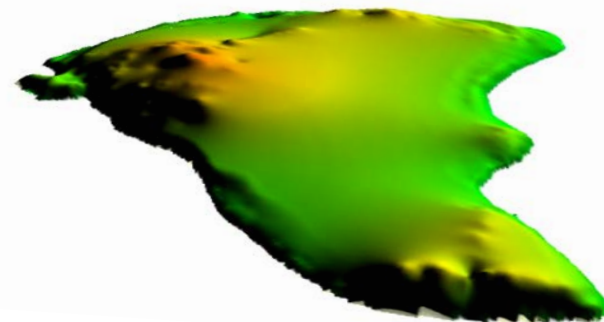
## Project Icewine Prospectivity Map



### Project Icewine 88 Energy Acreage Position

- 88E - pre 2016 Licensing Round 77.5%
- 88E - 1H2017 post award of 2016 Licensing round acreage 77.5%
- 88E - 1H2017 post award of 2016 Licensing round acreage 30% option

----- TransAlaskan Pipeline  
~ Dalton Highway



**Alpha Isopach**

# Project Icewine Conventional: Select Leads – Bravo – Western Play Fairway

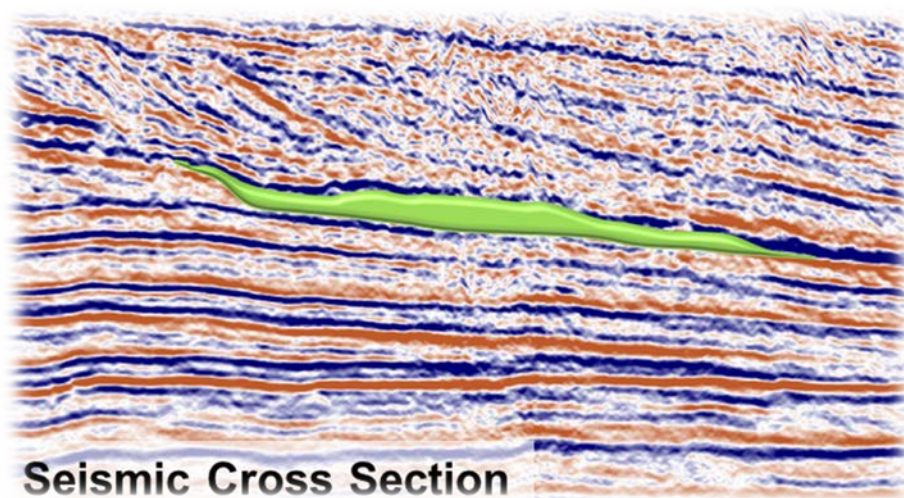


## Bravo

<b>Sequence</b>	Brookian
<b>Trap</b>	Stratigraphic pinchout to west and north
<b>Play</b>	Turbiditic fan system on slope apron Working petroleum system
<b>Remarks</b>	Large areal extent with significant relief

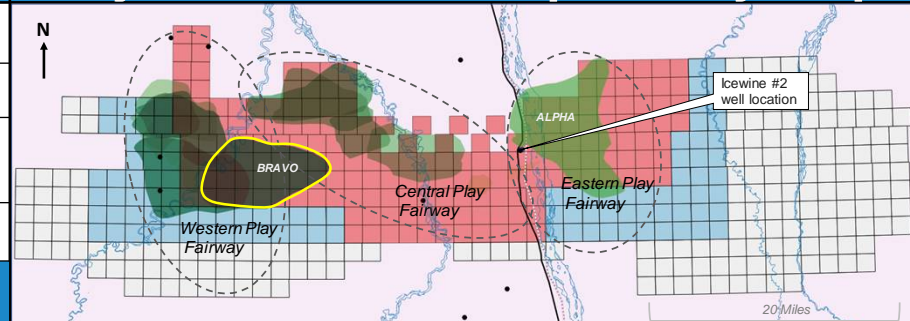
## Prospective Oil Resources (mmbbl) Unrisked Recoverable

P90	P50	P10	Mean	Net Mean to 88E
129	245	449	273	212



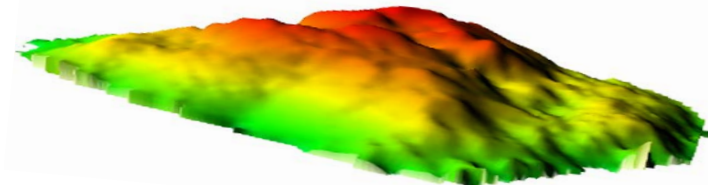
88 Energy Icewine 2D Seismic Data, (2016)

## Project Icewine Prospectivity Map



### Project Icewine 88 Energy Acreage Position

- 88E - pre 2016 Licensing Round 77.5%
  - 88E - 1H2017 post award of 2016 Licensing round acreage 77.5%
  - 88E - 1H2017 post award of 2016 Licensing round acreage 30% option
- Legend: TransAlaskan Pipeline, Dalton Highway



**Bravo Isopach**