# **SHOAL POINT ENERGY**

Core from 3K-39 well showing oil fluorescence

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## 51-101 Compliant Resource Assessment SUMMARY OF EVALUATION

#### Estimated Net Resource Volumes Certain Leasehold Interests of Shoal Point Energy, Ltd. (WI = 100%) Prospective Undiscovered Resource Volumes As of March 1, 2014

<u>Net Recoverable Resources</u>	Low <u>Estimate</u>	Best Estimate	High <u>Estimate</u>	
Oil/Condensate – Bbls	177,270,000	428,420,000	908,620,000	
Gas – MMCF	0	0	0	

Gas resources for these properties are comprised of solution gas volumes and are expressed in millions of cubic feet (MMCF). Gas resource volumes are assumed to be utilized for field operations and not available for gas market sales. All oil volumes are expressed in standard tank barrels (Bbls).

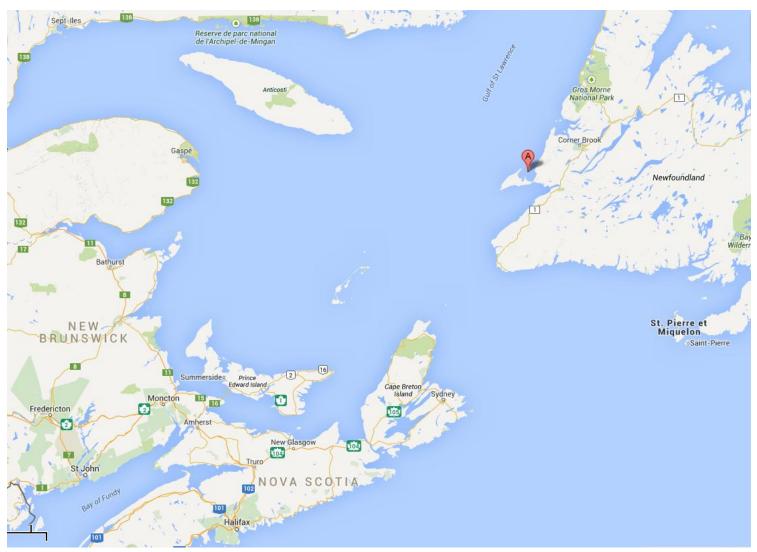
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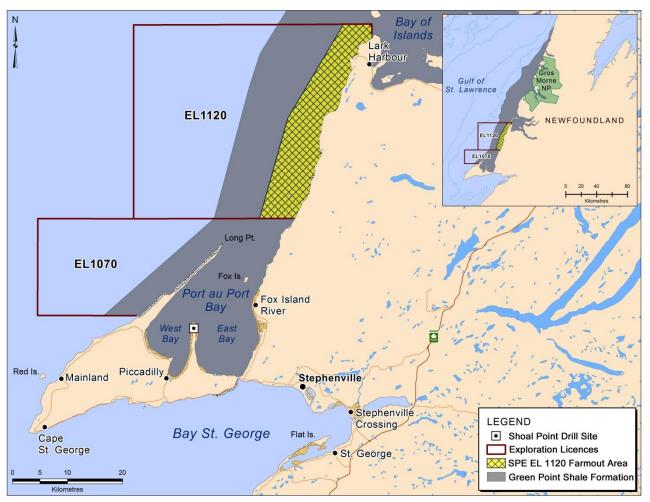
Prospective resources are defined as those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. Prospective resources are further subdivided in accordance with the level of certainty associated with recoverable estimates assuming their discovery and development and may be sub-classified based on project maturity. Prospective resources have both an associated chance of discovery (geological chance of success) and a chance of development (economic, regulatory, market, facility, corporate commitment or political risks). The chance of commerciality is the product of these two risk components. The prospective resource estimates referred to herein have not been risked for either the chance of discovery or the chance of development. There is no certainty that any portion of the resources will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the resources.

The Low Estimate represents the  $P_{90}$  values from the probabilistic analysis (i.e. the value is greater than or equal to the  $P_{90}$  value 90% of the time), while the Best Estimate represents the  $P_{50}$  values and the High Estimate represents the  $P_{10}$ . Actual resources may be greater or less than those calculated.

## **PROJECT LOCATION**



### **SHOAL POINT ENERGY** Exploration Licences #1070 and #1120



Wells to be drilled from onshore surface locations utilizing multi well Pads.

Shoal Point is operator and representative of EL 1070 and has certain farm-in rights on EL 1120

Approximately 60,000 prospective hectares in EL 1070

### **STEPHENVILLE PORT:** Low transportation costs



Year round deep sea port and airport 30 km. from Shoal Point

## **SUMMARY OF DRILLING HISTORY**

### Total wells: Approximately 17

#### **Historical Era:**

- Approximately 11 shallow wells (1898 1933)
  - Produced 10-20 BOPD
  - Drilled to 51 366 meters TD

#### **Modern Era:**

- 6 deeper wells drilled (1996 2012)
- Lacked current drilling and completion technology for shales

### **Seeps: Evidence of Active Petroleum System**



Oil Seep One Mile South of 3K Well

## SHOAL POINT FIELD ATTRIBUTES

#### **Unconventional Reservoir – Humber Arm Allochthon Shales**

- Large volume of OOIP with best estimate Prospective Recoverable Resources of 428 MMBO.
- Thick section of reservoir pay and large areal extent with better porosity than similar plays.
- Black oil system confirmed by production and outcrop seeps.
- Natural fractures created by tectonics and hydrocarbon generation should enhance productivity. Potentially producible without massive fracture stimulation.

#### **Conventional Reservoirs**

- Stratigraphic trapping in numerous porous clastic and carbonate reservoirs interlayered within the Humber Arm Shales.
- Structural traps created by basement highs and by intrusives.

## GLOBAL ANALOGOUS PROJECTS

Based Upon Geological or Operational Parameters:

> Bakken Shale Western Canada Montney Shale Ohio-Pennsylvania Utica Argentina's Vaca Muerta Permian Basin

#### There may be Bakken style trapping and reservoir development in the deeper part of the Humber Arm Allochthon.

From a 2011 Colorado School of Mines presentation by Sarg, et al regarding the Bakken:

"Mature over much of the basin, and still generating oil. Large fields (Elm Coulee, Sanish, Parshall) are situated at transition from mature to immature level of maturation. Volume increases during maturation by as much as 30%. Volume decrease at the transition to immature source rock is important to providing updip top and lateral seal."

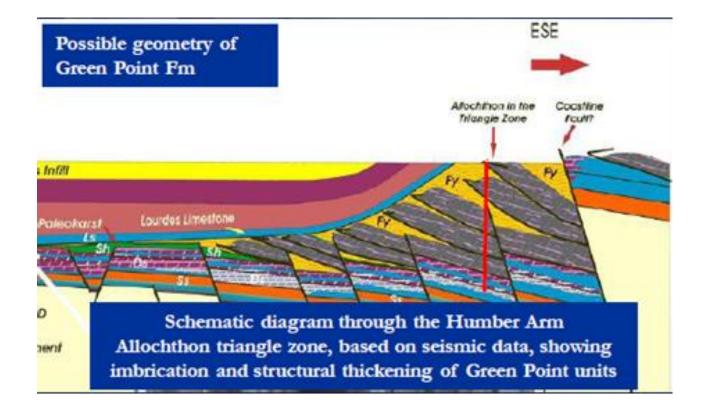
"The Upper Bakken shale is siliceous, increasing brittleness and enhancing fracability. During oil generation, the volume increase causes overpressure (0.6 -0.73 psi/ft pressure gradient) and horizontal micro-fractures in the shale, enhancing permeability."

We hypothesize that the enhanced porosity and permeability we see in the Humber Arm shales are caused by volume increase due to oil generation. Humber Arm shales are also siliceous and there is overpressure recorded at approximately 1000 metres true vertical depth.

## SHOAL POINT FIELD ATTRIBUTES

- Extensive shale formation with thickness ranging from 1000 3000 metres
- Multi well pad drilling to minimize drilling costs and surface footprint wells drilled from onshore to offshore
- Low Canadian dollar costs
- Tidewater play with access to nearby deep sea port
- Governmental Agencies Have a High Degree of O&G Expertise
- Local Upstream Workforce Available
- Moderate Weather Conditions 9 months of the year
- Modern Drilling and Completion Methods Yet To Be Applied

# **RESERVOIR GEOLOGY**

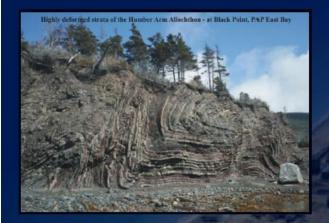


#### 1,000 – 3,000 meter thickness due to repeating beds

# **RESERVOIR GEOLOGY**

#### Fractured and Structured Green Point Shales Surrounding the Bay







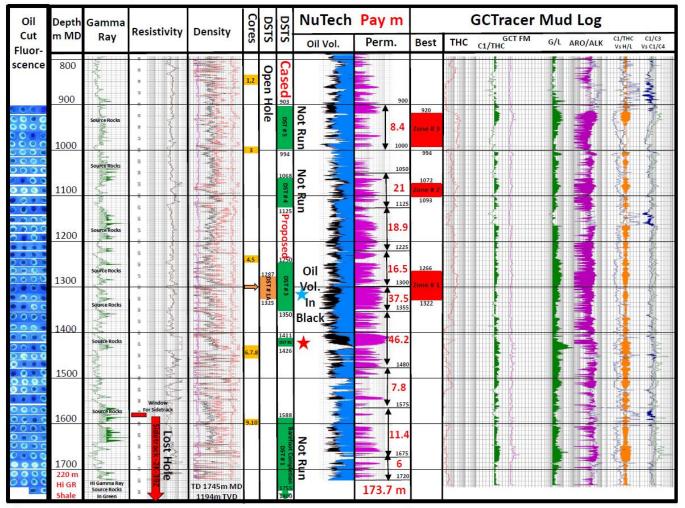


# **NuTech Evaluation**

# **Humber Arm Shales**

## **RESERVOIR GEOLOGY**

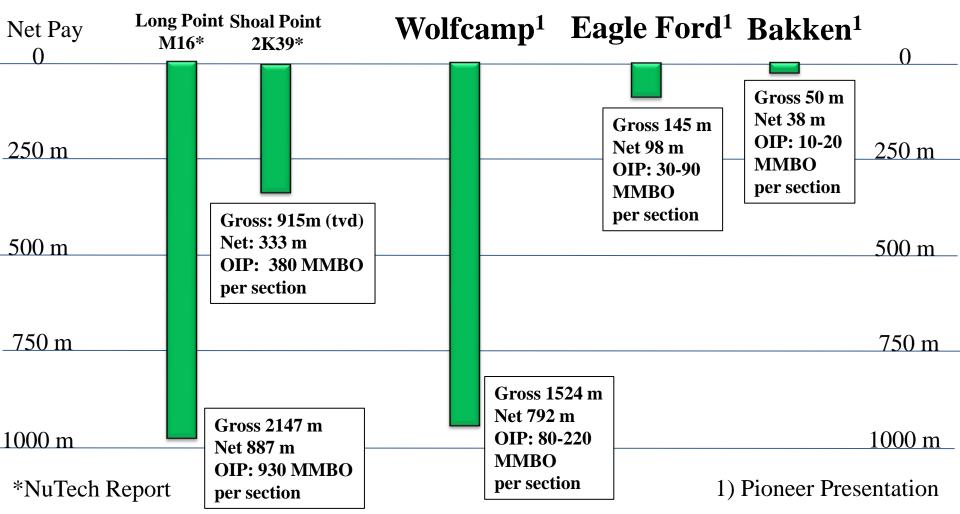
#### Shoal Point 3K-39 - 800 to 1720m Oil Indications



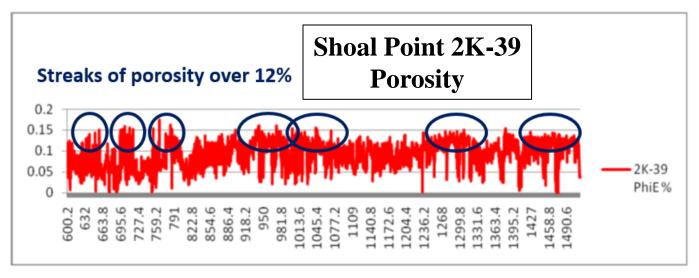
DST 2 Injection test 14 day. Perm of 16 microdarcies and pore pressure at 0.49 psi/ft, 10% overpressured DST 3 Swabbed numerous times with no formation fluid influx Suspected major Formation damage and need for fracking Stratification of Potential Conventional Reservoirs With Source Shales Provides a Favorable Analogy with the Monterrey & Sprayberry-Wolfcamp

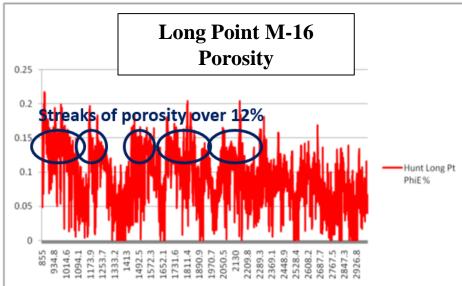
## Humber Arm Shales Comparison Thickness and Oil in Place





## Humber Arm Shale Porosities





These thick sequences include multiple rich oil prone shales which feed oil into the thick multiple beds of siltstones, sandstones and carbonates.

## **US Shale Parameter Comparison**

Shale Play	Downott	Howasville	Marcellus	Foolo Ford	Niabrara	Utica/Point Pleasant
Parameters	Barnett	Haynesville	warcenus	Eagle Ford		Pleasant
Basin	Ft. Worth	East TX, LA	Appalachian	Maverick	DJ & Powder River	Appalachian
Age	L. Mississippian	U Jurassic	Devonian	U Cretaceous	L Cretaceous	M-U Ordovician
Depth (m)	1,981 - 2,591	3,200 – 4,115	1,219 - 2,591	2,438 - 4,267	610 - 2,438	610 – 3,048
Net Thickness (m)	30 - 122	61- 91	15 - 107	46 - 91	91 - 183	43 - 98
тос (%)	3 - 7.5	.05 - 4	3 - 10	2 - 6	3 - 5.8	1 - 2.75
Total Effective Porosity (Ave) %	4 - 8	7 - 8	4.5- 7	9 - 11	3 - 5.8	1 - 2.75
Average Permeability -micro Darcy (μD)	0.25	0.27	1.00	0.48	0.19	0.54
Average Lateral Length (m)	762 – 1,067	1,067 – 1,158	762 -1,524	1,158 - 1,676	1,067 – 1,524	1,219 – 1,981
Oil/Gas Content/section	300-350 BCFE	100 - 330 BCFE	60 - 150 BCFE	200 - 220 BCFE	21-43 MMBOE	4 - 16 MMBOE
Ave Vclay (%)	21	39	30	18	35	30
IP	1 - 9 MMCFE/D	9 - 25 MMCFE/D	2.5 - 20 MMCFE/D	5 - 17 MMCFE/D	100 - 1000 BOE/D	400 - 1,100 BOE/D
EUR	2 - 5 BCFE/WELL	4.5 -10 BCFE/WELL	2-10 BCFE/WELL	3-8 BCFE/WELL	50-500 MBOE/WELL	98 - 1,760 MBOE/WELL
Mudlog Shows	Yes	Yes	Yes	Yes	Yes	Yes
Pore Pressure Gradient (psi/ft)	0.6	0.75	0.5 - 0.6	0.52 - 0.65	0.49	0.5 - 0.8

## Shoal Point 3K-39 Parameters Humber Arm Shales

Interval Parameters	Interval #2	Interval #3 Interval #4		Interval #5	
Age	Ordovician	Ordovician	Ordovician	Ordovician	
Depth M	1,411 - 1,426	1,250 - 1,350	1,068 - 1,125	903 - 994	
Net Thickness ( M) Measured*	16	76	24	28	
Ave TOC ( %)	2.7	1.8	1.7	1.8	
Total Effective					
Porosity (Ave) (%)	11.8	13	8.8	10.6	
Average Permeability μD Derived from well test*	16	1.44	0.33	0.27	
Oil Content/Section (MMBOE/Sec)	18.4	58.3	20.9	26	
Ave Vclay (%)	26	32	34	36	
Mudlog Shows	Yes	Yes	Yes	Yes	
Pore Pressure Gradient (PSI/Ft) Derived from well					
test	0.49				

#### Humber Arm Shales and US Shale Comparison

		Shoal Point 3K-39 – Best Zones								
	Zone	#1		#2		#3		#4		
	Thickness r	n	n 16			24		28		
	Porosity %	б <b>11.8</b>		13.0		8.8		10.6	Average	
			Shoal P	oint 2K-	39 - B	est Zones			Porosity	
	Zoi	Zone		1 #2		#2		#3	Based on NuTech	
	Thickn	Thickness m		3	3 107			103	Analysis	
	Poros	rosity %			9.7		10.1			
Long Point M-16 – Best Zones										
	#1		#2		#3		#4		#5	
Thickness	m	146	46 94		94			106	123	
Porosity 9	%	13.8	10	10.3		11.2		9.6	8.8	
US Shale Comparison										
Shale Play	vs Barnet	t Hay	nesville	ville Marco		Eagle Fo	rd	Niobrara	Utica/Pt. Pleasant	
Thickness r	n 30-122	E	61-91 15		.07	46-91		91-183	43-98	
Porosity %	<b>4-8</b>		7-8		7	9-11		6-7.5	4-5	