

SYNTANA Drill Hole SYN-4
 Location 295FNL, 70' FEL, Sec 9 T9S R24E
Uintah Co. UT

Collar Elevation 5432

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Total Depth 2254

Drilled 1943.0 - 1970

Logged By CRB, VDD

Recovery				Core Run		Depth	Yield		Spent	Description	
RQD		Total					g/t		Shale		
%	Ft	%	Ft	Ft	Min		Oil	Water	%		
										Projected top Wavy @ 1940	
						1943				Top Core 1943	
						1945	13.8	0.7	93.1	Brown, thinly laminated oil shale	
							11.6	0.5	94.2	Vert. frac 1943-43.7	
							11.1	0.5	94.5		
							8.0	0.7	95.7		
							8.0	0.7	95.8		
							11.3	0.6	94.6	Bedding 90° to CA	
						1950	13.8	0.7	93.3		
							15.3	1.0	92.5		
							9.5	1.0	94.9		
							6.7	0.5	95.9	Concave vert. frac 1952.0-52.6	
							9.0	0.7	95.2		
						1955	8.8	1.0	95.2		
							6.0	0.5	96.7	Bedding @ 85° to CA	
							10.7	0.6	94.6		
							16.1	0.7	92.1		
							16.0	0.5	92.5		
						1960	12.3	0.5	94.0		
							9.2	0.7	95.4		
							10.5	0.5	95.1	Concave vert. frac. 1962.4-1963.8	
							10.8	0.6	94.8		
93	19.4	100	20.9	20.9	105		14.1	0.7	93.2	End 1 Run 1963.9 03:45 12-5-80	
						1965	39.6	1.4	81.1	Brown, thinly laminated oil shale	
							23.4	1.0	88.8		
							13.4	0.7	93.4		
							12.2	0.6	94.0		
							14.2	0.7	92.9		
						1970	15.5	0.5	92.7		

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Location 29.5' FNL, 70' FCL, SEC 29, T9S, R24E

Total Depth 2254

Uintah Co, UT

Drilled 1970-2000

Logged By VDD

Recovery				Core Run		Depth	Yield		Spent
RQD		Total		Ft	Min		g/t		Shale
%	Ft	%	Ft				Oil	Water	%
						1970			
							15.3	0.6	92.7
							14.9	0.7	92.7
							20.4	1.0	90.5
							40.5	1.6	80.5
						1975	20.2	1.0	90.3
							15.1	1.0	92.5
							17.8	0.8	91.5
							22.6	1.2	89.3
							37.4	1.6	82.4
						1980	17.8	1.0	91.4
							7.5	0.5	96.1
							6.2	0.7	96.5
							7.9	0.2	96.2
							8.2	0.2	96.1
						1985	9.6	0.5	95.4
							11.5	0.2	94.3
							7.8	0.7	95.0
							5.0	0.5	97.1
							4.1	0.4	97.3
						X 1990	3.6	0.5	97.7
							3.3	0.6	97.5
						X	4.7	0.2	97.6
						X	10.2	0.6	95.0
						X	20.7	0.5	96.0
						X 1995	10.1	0.4	94.8
						X	37.0	1.4	82.7
							23.6	1.4	88.5
						□	18.8	1.2	90.9
						X	17.4	1.0	91.8
						2000	10.8	1.0	94.6

X = Brazilian Test
 □ = Compression Test

Tuff bed 3mm @ 1970.8

Tuff bbls. to 10 mm @ 1973.0
 to 20 mm @ 1973.3
 to 25 mm @ 1974.5
 to 6 mm @ 1975.2
 Tuff bed to 6 mm @ 1977.7
 Tuff bbb to 5 mm @ 1978.6

Top Aggrove

Tuff bed 40mm @ 1984.2
 END CORE RUN #2 @ 1984.2 1000 hrs Spaced (under 1000 ppm)
 Brown thick Tuff bbls to 5mm @ 1984.6
 1985.9 (oil)
 1986.3 - 86.5

Tuff bbb to 10mm 1993.0 (oil)
 Tuff bed to 5mm @ 1995.4
 Bottom Aggrove

Beds @ 85 to CA

Tuff beds, v. thin < 3mm 1996.9-2000
 numerous

SYNTANA Drill Hole SYN-4Collar Elevation 5432Page 8 of 12Location 295 ENL, 70 FEL, SEC 29, T9S, R24ETotal Depth 2254UINTAH CO, UTAHDrilled 2000 - 2030Logged By CRB, VDA

Recovery				Core Run		Depth	Yield		Spent	Description	
RQD		Total					g/t		Shale		
%	Ft	%	Ft	Ft	Min		Oil	Water	%		
93	18.6	99	19.9	20.0	95	2,000	17.8	1.0	91.6	Tuff bed to 15mm @ 2000.0	
						21.0	1.0	89.6	" " " 10 mm @ 2001 (oil)		
						26.9	1.2	86.4	False Marker 2001.6-2002.0 Tuff beds to 10 mm @ 200.4-2000.8 (oil)		
						32.3	1.9	84.5	Tuff bed to 15mm @ 2000.7 (oil) numerous		
						2005	22.0	1.7	89.1	END RUN #3 2004.2 1400 hrs 500000 (oil)	
						30.3	1.4	85.9	Tuff bed, contorted bedding 2000.6-2001.9 (oil)		
						47.7	1.0	78.8	2002.0 (oil)		
						44.4	1.7	78.9	50mm 2002.3-2.4 (oil)		
						31.3	1.4	85.9	Angled bed frac @ 2007.3 15mm 2007.0 (oil)		
						2010	26.1	1.0	87.9	10mm 2007.3 2008.2-8.4 in tuff bed. tuff & oil shale 50mm thick	
						21.0	1.2	89.6	Brown thinly laminated oil shale		
						21.2	1.0	89.8	Tuff beds to 15mm @ 2009.3		
						15.1	1.0	92.4	to 5mm @ 2009.4 (2 tuffs)		
						11.6	0.7	93.9	to 3mm @ 2009.8		
						2015	21.0	1.2	89.8	Bedding @ 85° to CA	
21.8	1.2	89.9									
14.6	1.3	92.7									
12.8	1.2	93.5									
12.3	0.7	93.4									
2020	11.4	3.6	92.7	2019.3 mahogany 100mm thick, heavy oil tuff							
11.4	1.2	94.0	Marker								
9.9	1.1	94.4									
9.5	0.7	94.8									
12.3	1.0	93.7									
2025	14.2	1.0	93.1	End Run #4 @ 2024.2							
43.9	1.4	79.2	Tuff bed to 20mm @ 2024.9 (oil)								
44.3	1.6	79.1	buff colored oil shale bands up to 15mm thick in brown lam. oil shale								
24.5	1.4	88.1									
22.3	1.0	89.5									
2030	24.3	1.0	88.8								

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Location 295 FNL, 70 FEL, SEC 29, T9S, R24E

Total Depth 2254

UNTAH CO, UT

Drilled 2030-2060

Logged By VDD, CRB

Recovery				Core Run		Depth	Yield		Spent
RQD		Total		Ft	Min		g/t		Shale
%	Ft	%	Ft				Oil	Water	%
							27.7	0.7	87.1
							17.7	0.7	91.8
							21.2	0.7	90.5
							33.0	0.5	85.1
						2025	33.5	1.0	84.4
							37.2	1.3	82.2
							75.1	2.1	65.4
							78.3	1.8	64.3
							67.8	2.2	68.8
						2040	53.8	1.7	74.4
							44.8	1.4	79.6
							52.8	1.6	75.2
							32.3	1.4	84.5
96	121	100	20.0	20	90		25.3	1.2	87.6
						2045	50.3	1.2	76.8
							53.9	0.7	75.1
							39.8	1.4	81.0
							19.8	1.0	89.0
							17.6	1.4	90.5
						2050	18.6	1.9	89.8
							36.6	1.7	82.7
							60.4	1.4	72.0
							32.1	0.7	84.0
							39.8	1.2	81.0
						2055	32.0	0.7	84.4
							24.2	1.0	88.4
							22.2	0.7	88.4
							32.3	0.7	85.2
							34.6	1.0	83.7
						2060	18.7	1.2	90.7

Description

top of rich bed 2037

Tuff bed 40mm @2042.4 (oil)

Sand 1" @2044.7

Tuff beds, contact beds (oil)
2 beds @20mm @2052.7
to 15mm

Tuff bed 15mm 2058.1

96 17.1 100 20.0 20 90

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Location 295 FNL, 70 FEL, SEC 29, T9S, R24E

Total Depth 2254

UINTAH CO, UT

Drilled 2060 - 2090

Logged By VDD, CRB

Recovery				Core Run		Depth	Yield		Spent	Description
RQD		Total		Ft	Min		g/t		Shale	
%	Ft	%	Ft				Oil	Water	%	
95	18.7	100	20.0	20.0	90	2060.0	22.6	0.7	89.5	2063.2 End Run 6 @ 2064.2 } 65% nahcolite 35% oil shale 2064.9
						15.8	0.5	92.5		
						18.7	1.0	91.2		
						15.5	16.5	68.6		
						2065	16.0	16.3	67.7	
						22.5	1.9	88.1		
						13.7	1.1	92.6		
						12.6	0.7	92.3		
						17.3	0.5	92.0		
						2070	15.8	0.5	92.6	
						23.1	0.7	89.5		
						28.1	7.0	77.4		
						12.6	16.8	68.9		
						28.9	5.0	80.2		
						25.9	1.3	87.6		
93	10.1	100	20.1	20.1	90	2075	22.8	1.2	89.0	2071.8 } 60% nahcolite, 40% oil shale 2073.2 } Brown lam oil shale
						27.5	1.2	87.1		
						38.6	1.0	81.3		
						25.4	0.5	88.1		
						2080	22.4	1.2	89.1	
						21.8	1.4	89.4		
						16.1	0.7	92.1		
						12.7	0.7	93.4		
						14.2	0.7	93.0		
						16.6	1.0	91.9		
						2085	25.4	1.4	87.5	
						13.7	1.2	93.0		
						12.0	1.2	93.6		
						8.0	1.2	95.7		
						2090	8.2	1.2	95.6	
Tuff bed to 30mm 2086.0 (oil) 20mm 2088.8 2092.0										

Tuff bed to 30mm 2086.0 (oil)
 20mm 2088.8
 2092.0

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Location 295 FNL, 70 FEL, SEC 29, T9S, R24E

Total Depth 2254

UINTAH CO, UT

Drilled 2090-2104.2 Logged By CREVDD

Recovery				Core Run		Depth	Yield		Spent
RQD		Total		Ft	Min		g/t		Shale
%	Ft	%	Ft				Oil	Water	%
						2090	6.1	0.6	96.8
							12.2	1.3	93.8
							21.9	1.2	90.1
							6.7	1.7	95.5
							6.3	2.9	95.8
							11.0	0.7	94.5
							34.9	1.4	83.7
							20.3	1.1	90.0
							11.0	1.0	94.4
						2100	9.5	0.7	95.2
							8.6	0.8	95.5
							15.2	1.0	92.5
							32.4	1.2	84.9
86	17.2	99	19.9	20	60		47.9	1.8	77.6

Description

Tuff bed to 5mm @ 2092.0

2093.9 1.5cm marcasite
noduleTuff bed (oil) 2093.9 }
2094.2 }25mm 2096 (heavy)
bleb 15mm 2096.4 "

END Run @ 2104.2 @ 1215 hrs, 6 Dec 80 TDS: 1450 ppm

end core 2104.2

rotary drilling to T.D.

est. top Curly Marker
2111 (17ft below tuff bed @ 2094)