Geologic Investigations No. 76
Edward C. Murphy, State Geologist
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The Three Forks Formation - North Dakota to Sinclair Field, Manitoba

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A

33-033-00228-0000
15029
SENW Sec. 28, T.144N., R.103W.
Agate Petroleum, Inc.
Moore-Federal #2-28
KB - 2,266 ft.

33-053-02713-0000
16177
SESW Sec. 8, T.149N., R.99W.
Whiting Oil and Gas Corporation
Mork #24-8
KB - 2,164 ft.

33-053-02540-0000
15045
NENE Sec. 31,T.153N., R.95W.
Petro-Hunt, L.L.C.
Quale #31A-1-2
KB - 2,299 ft.

33-061-00581-0000
16841
NESE Sec. 28, T.154N., R.92W.
Fidelity Exploration & Production Company
Deadwood Canyon Ranch #43-28H
KB - 2,219 ft.

33-075-01325-0000
14970
SWNE Sec. 20, T.158N., R.81W.
Huntford Resources Corporation
Caitlin Hollis #1-20
KB - 1,558 ft.

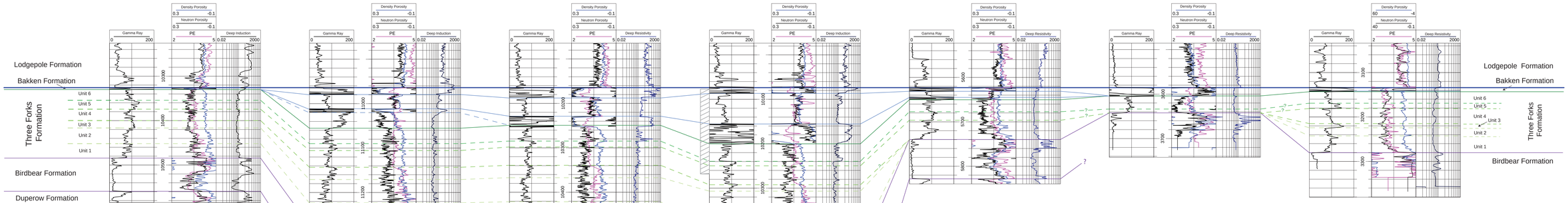
A'

33-079-00056-0000
14988
NWSE Sec. 27, T.163N., R.73W.
Eagle Operating, Inc.
Strong #27-10
KB - 2,139 ft.

A"

100/0991000829W1/00
5343
Rideau Petroleum, Ltd.
Rideau South Ebor 9-10-8-29 WPM
KB - 1,710 ft.

Sinclair Field, Manitoba



Manitou Field, North Dakota

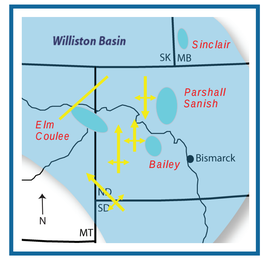
33-105-01667-0000
17015
NESE Sec. 36, T.156N., R.95W.
Headington Oil Company, LLC.
Nesson State 42X-36
KB - 2,382 ft.

Sinclair Field, Manitoba

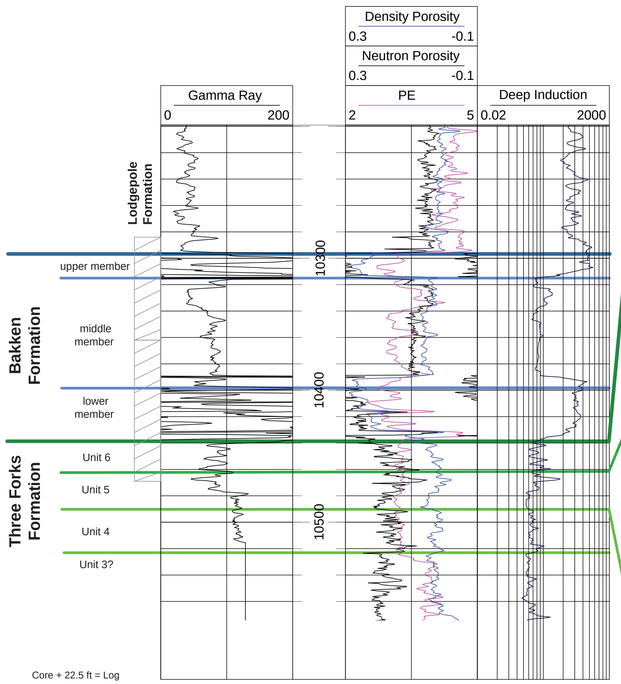
100/0991000829W1/00
5343
Rideau Petroleum, Ltd.
Rideau South Ebor 9-10-8-29 WPM
KB - 1,710 ft.

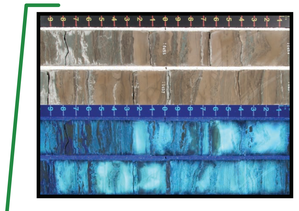
Units based on:

Christopher, James, E., 1961, Transitional Devonian-Mississippian Formations of Southern Saskatchewan, Saskatchewan Mineral Resources Report 66, 103 p.



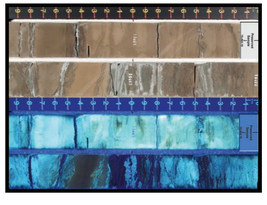
Location map showing the important fields producing from the Bakken and Three Forks Formations.





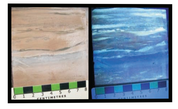
Unit 6 - (Log Depth 10476.5 ft; Core Depth - 10454.05), photographed in white (upper) and ultraviolet (lower) light.

Interbedded sequence of apple green and tan claystones and doloarenite with laminations, ripple lamination, fluid escape structures and mudcracks.

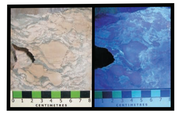


Unit 5 - (Log Depth 10486.6 ft; Core Depth - 10464.15), photographed in white (upper) and ultraviolet (lower) light.

Tan, lenticular dolomitic mudstone with an occasional green-grey claystone bed.

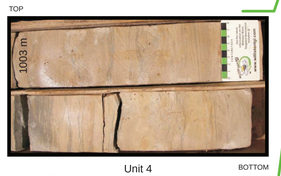


Core samples from the reservoir rocks in Sinclair Field photographed under white (left) and ultraviolet (right) light.

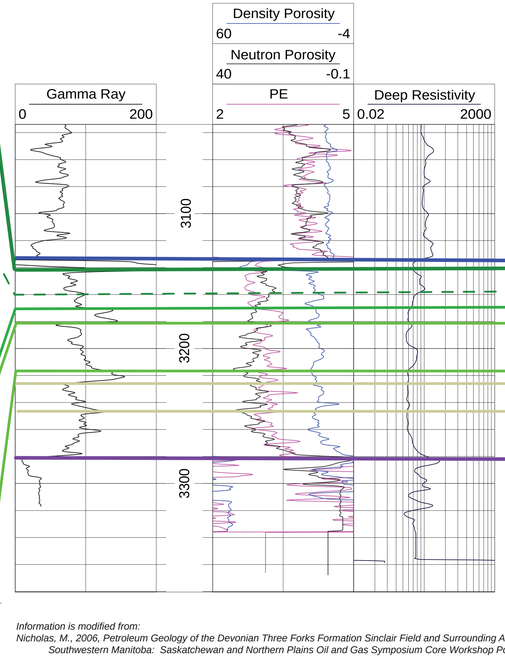


Unit 6 (upper portion)
Reservoir Unit - Sinclair Field, Manitoba
2-8-8-29W1

Unit 6 (lower portion)
Reservoir Unit - Sinclair Field, Manitoba
2-8-8-29W1



Unit 4
Reservoir Unit - Daly Field, Manitoba
2-8-8-29W1



Bakken Formation

Upper Bakken Member - black to brown-black to dark grey fissile to blocky, non-calcareous shale

Middle Member - light to dark grey, mottled to laminated, siltstones and sandstones.

Unit 6 - Basal thin, massive, tight grey-green dolomitic shale to silty shale sequence overlain by a grey-green with light brown to tan doloarenitic siltstone clasts with a brecciated appearance (Nicholas' Unit 4a and 4b). This overlain by a sequence of light brown to tan doloarenitic siltstone and grey-green shale (Nicholas' Unit 4c).

Unit 5 - Rusty brown dolomitic shale with faint relict pseudomorphs of rotted, angular, and fine-grained siltstone clasts (Nicholas' Unit 3).

Unit 4 - Randomly alternating cycles of light brown to tan doloarenitic siltstone clasts in a shale matrix, rhythmically alternating laminated siltstone and shale beds, and massive grey-green to rusty brown shale to silty shale. Overlain by a light brown to tan doloarenitic siltstone with grey-green shale as laminae, interbeds and matrix. Capped by a thin, massive, tight grey-green dolomitic shale to silty shale (Nicholas' Unit 2b and 2c).

Unit 3 - Massive oxidized silty shale (Nicholas' Unit 2a).

Unit 2 - Concentrated breccia with rotted dolomite fragments in a brown mudstone matrix.

Unit 1 - A red brown to light brown to tan doloarenite with grey green shale to silty matrix. Anhydrite occurs throughout the unit as white or resinous brown blebs and large nodules.

Descriptions From:

Nicholas, M., 2006, Petroleum Geology of the Devonian Three Forks Formation, Sinclair Field and Surrounding Area, Southwestern Manitoba: Saskatchewan and Northern Plains Oil and Gas Symposium Core Workshop Volume, p. 1-26.

Christopher, James, E., 1961, Transitional Devonian-Mississippian Formations of Southern Saskatchewan, Saskatchewan Mineral Resources Report 66, 103 p.

Information is modified from:
Nicholas, M., 2006, Petroleum Geology of the Devonian Three Forks Formation Sinclair Field and Surrounding Area, Southwestern Manitoba: Saskatchewan and Northern Plains Oil and Gas Symposium Core Workshop Poster