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WHITEHALL EXPLORATION

WELLSITE GEOLOGIC CONSULTING AND COMPLETE WELL LOGGING

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GEOLOGICAL ANALYSIS AND WELL REPORT

DOMINION EXPLORATION AND PRODUCTION, INC.

Blout No. 5-5

510' FEL & 1,830' FSL

Approx. NE-SE

Section 5 - Township 33 South - Range 42 West

Morton County, Kansas

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GENERAL INFORMATION

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Elevation:	G.L. 3,513' K.B. 3,523' All measurements are from KB.
Field:	Mustang East
Drilling Contractor/Rig No.:	Cheyenne Drilling Co./ No.1
Total Depth:	RTD 4,750' LTD 4,740'
Surface Casing:	8 5/8" set @ 1,397'
Production Casing:	5 1/2" set @ 4,747'
Drill Time Kept:	2,500' to 4,750' RTD
Samples Examined:	2,500' to 4,750' RTD
Samples Saved:	2,500' to 4,750' RTD
Consulting Wellsite Geologist:	Richard J. Hall-CPG Consulting Geologist Whitehall Exploration-Golden, CO
Mudlogging Unit:	MBC Leasing- Unit No. M-2
Unit Type:	Standard Hotwire/Standard Chromatograph
Mudlogging Geologist:	Richard J. Hall (unmanned unit)
Field Company Man:	Darrel Toews
Drill Stem Test Company/ Tester:	None
Number of Tests:	None
Test Type:	None
Mud Company/Engineer:	M-I, LLC- Dennis Thompson
Mud Type:	Chemical
Electric Logging Company:	Baker Atlas

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Type Logs:

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-High Definition Induction/GR/SP
-Compensated Neutron Density/GR
-Microlog/GR

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Total Depth Formation:

Middle Morrow Shale (approximately 125 feet
below the Upper Morrow Sandstone)

Samples:

One (1) dry cut from 2,500'-4,750' sent to Kansas
Geological Survey Sample Library- Wichita, Kansas

Well Status:

Production casing set to test and commercially
produce the Upper Morrow Sandstone

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<u>2003 Date</u>	<u>7:00 A.M. Total Depth</u>	<u>24 Hour Footage</u>	<u>7:00 A.M. Operation: 24 Hour Activity</u>
01/30/03	0	0	MIRU; drill rat & mouse holes, spud 12 1/4" hole @ 11:00 PM, drilling.
01/31/03	502'	502'	Run dev. survey; drilling, survey, drilling, survey, drilling, survey, drilling, circ./ condition mud, run survey, trip out of hole, RU & run 8 5/8" surf. casing.
02/01/03	1,400'	898'	Running 32 jts surf. casing; set @ 1,397' w/ w/ 465 sx cmt, plug down @ 10:30 AM, WOC, nipple up BOP, trip in hole, test BOP, drill out plug & cmt @ 7:15 PM, drilling.
02/02/03	2,078'	678'	Drilling ahead; run survey, drilling, survey, drilling, change to mud pump #2, drilling.
02/03/03	3,066'	988'	Drilling ahead; survey, drilling, survey, drilling, survey, drilling.
02/04/03	3,847'	781'	Drilling ahead; survey, drilling.
02/05/03	4,425'	578'	Drilling ahead; CFS @ 4,605', drilling, CFS @ 4,617', drilling, reach 4,750' RTD @ 9:00 PM, CFS/circ. 1.5', short trip 20 stands, circ. 1', drop survey, trip out of hole strapping pipe, RU loggers, logging.
02/06/03	4,750'	325'	Running electric logs; RD loggers, trip in hole, condition hole, prepare to run prod. csg.
02/07/03	4,750'	0	Running prod. csg.; cement csg., plug down @ 10:00 AM, rig released.

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REFERENCE WELLS

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Reference Well "A": Dominion Oklahoma Texas Expl. & Prod., Inc.
Blout No. 2-5
2000' FSL & 1,500' FEL
Section 5-T33S- R42W
Morton County, Kansas
Elevation: KB 3,529'
Date Drilled: April 2002
LTD: 5,078'
TD Formation: Mississippian Chester
Status: Upper Morrow Sandstone Oil/Gas Producer

Reference Well "A": Dominion Oklahoma Texas Expl. & Prod., Inc.
Blout No. 6-5
330' FSL & 330' FEL
SE-SE-SE
Section 5-T33S- R42W
Morton County, Kansas
Elevation: KB 3,524'
Date Drilled: September 2002
LTD: 5,020'
TD Formation: Mississippian Chester
Status: Upper Morrow Sandstone Oil/Gas Producer

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DEVIATION SURVEYS

<u>Depth</u>	<u>Degree (s)</u>	<u>Methods</u>
502'	1 ¼	wireline
627'	¼	wireline
936'	0	wireline
1,216'	¼	wire line
1,400'	½	drop
2,139'	0	wireline
2,512'	1	wireline
3,284'	½	wire line
3,784'	¼	wire line
4,312'	¼	wire line

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4,559'
4,750' RTD

1/4
3/4

wireline
drop

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DRILL STEM TESTS/CORES

None

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FORMATION TOPS

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FORMATION	Blout 5-5 ELECTRIC LOG		Blout 2-5 REFERENCE	Blout 6-5 REFERENCE	DIFFERENCE TO REFERENCE WELL	
	TOPS	DATUM	WELL "A"	WELL "B"	"A"	"B"
PENNSYLVANIAN						
Wabaunsee	2662	861	861	860	Flat	1
Topeka	2901	622	618	627	4	-5
Heebner	3247	276	265	298	11	-22
Lansing	3394	129	117	150	12	-21
Lansing Zone	3634	-111	-125	-89	14	-22
Marmaton	3931	-408	-415	-380	7	-28
Morrow Shale	4448	-925	-940	-885	15	-40
Upper Morrow Ss	4588	-1065	-1083	-1026	18	-39

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ZONES OF INTEREST

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<u>Formation</u>	<u>Log Depth</u>
Lansing	3,634'-3,639'

Lithology & Show Descriptions, Remarks

Limestone, buff-tan, mottled appearance, fine in part-very fine crystalline, firm-hard, very oolitic, oolmoldic in part, moderately chalky, some white chalk pieces, fair intercrystalline porosity, very good oolmoldic vuggy porosity, NO SHOW: no hydrocarbon fluorescence, slight dull mineral fluorescence, no show, no live or residual cut. A hotwire gas increase to 310 units total was recorded over this zone with associated chromatograph readings of C₁=124 units, C₂=34 units, and C₃=10 units. This zone was not drill stem tested.

Electric logs indicate this zone has very well developed porosity and permeability with very good SP, micro log, and mud cake development, maximum density porosity of 25.5%, maximum neutron porosity of 16%, good neutron/density crossover gas effect, and maximum deep induction resistivity of approximately 150 ohms.

Upper Morrow Sandstone	4,588'-4,594'
------------------------	---------------

Sandstone, off white-light gray, tan in part, clusters, subfriable to hard, predominately very fine-fine grained with some medium grains, subrounded-subangular, fair-medium sorting, very good calcareous cementing, slightly shaley in part, moderately-very white clay filled in part, minor pyrite, fair-good intergranular porosity; grading to:

Sandstone, light gray-buff/tan, subfriable to firm, mostly very fine-medium grained with abundant coarse lower grains, subrounded-angular, very poorly sorted, slight calcareous cementing, minor scattered glauconitic, good-very good intergranular porosity, VERY GOOD SHOW: very good oil and gas odor, very good mostly saturated bright yellow-slightly greenish fluorescence, good brown spotty oil stain, trace show of free oil when crushed, slow-intermediate streaming live cut, grading to excellent white milky cut, excellent bright yellow dried residual cut. A total hotwire gas increase to 141 units was recorded over this interval.

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Upper Morrow 4,603'-4,609'
Sandstone

Chromatograph readings of C₁=78 units, C₂=32 units and C₃=4 units were also recorded.

This zone recorded a drilling break to 1/2-1 minute per foot from a background rate of penetration of 2-3 minutes per foot.

Electric logs show this sandstone has a moderately clean gamma ray, good SP, mud cake, and micro log development, maximum 20% density porosity (no neutron/density crossover), and deep induction resistivity of 6-10 ohms.

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Sandstone, light-medium gray with tan in part clusters, predominately fine upper to coarse lower grained, poor sorting, subrounded-angular, mostly silica with very slight calcareous cementing, abundant quartz overgrowths with some subhedral overgrowths, frosted and clear individual grains, minor dark gray shale inclusions, scattered pyrite and mica inclusions, intermediate-very good intergranular porosity, VERY GOOD SHOW: excellent odor, very good near saturated bright yellow-slightly greenish fluorescence, good brown spotty oil stain, trace-fair show of free oil when crushed, intermediate yellow-white streaming live cut, grading to excellent white milky cut, excellent bright yellow dried residual cut. A hotwire gas increase to 166 units total and associated chromatograph readings of C₁=122 units, C₂=39 units, C₃=49 units, IC₄=20 units, and NC₄=2 units, were recorded over this zone.

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This sandstone recorded a drilling break to 1-1 1/2 minutes per foot from a background rate of penetration of 2-3 minutes per foot. This zone was not drill stem tested.

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Electric logs indicate this sandstone has a mostly dirty/shaley gamma ray, medium-good SP development, micro log and mud cake development from 4,603'-4,606', has 14-21% density porosity, (no neutron/density crossover), and maximum deep induction resistivity of 6 ohms.

Upper Morrow 4,614'-4,618'
Sandstone

Sandstone, predominately clear-opaque/light gray clusters predominately fine upper to coarse lower grained, poor sorting, surrounded-angular, siliceous, well silica cementing, abundant quartz overgrowths

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with some subhedral overgrowths, scattered dark gray shale inclusions, poor-fair intergranular porosity, GOOD SHOW: good odor, very good uneven bright yellow-slightly greenish fluorescence, minor brown spotty oil stain, no show of free oil, fair very slow yellow-white streaming live cut, excellent bright yellow dried residual cut. A hotwire gas increase to approximately 110 units total and associated chromatograph readings of $C_1=27$ units, $C_2=8$ units, and $C_3=2$ units were recorded over this zone.

This sandstone recorded a rate of penetration of 1 1/2-2 minutes per foot from a background rate of penetration of 2-3 minutes per foot. This zone was not drill stem tested.

Electric logs indicate this sandstone has a very clean gamma ray, intermediate SP development, good micro log and mud cake development, 8-17% density porosity, slight neutron/density crossover gas effect, and maximum deep induction resistivity of 37 ohms.

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SUMMARY

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The Dominion Blout No. 5-5 was drilled as a development location in the continuing development of the Mustang East Field in Section 5-T33S-R42W. The Blout No. 5-5 was drilled in an attempt to extend commercial oil and gas production from the Upper Morrow Sandstone on the eastern edge of the field, east of the Dominion Blout No. 2-5 oil and gas producer and north of the Dominion Blout No. 6-5 gas producer.

The Blout No. 5-5 had a primary objective in the Upper Morrow Sandstone with secondary objectives in the Wabaunsee, Topeka, and Lansing Formations. Because existing well control in the field indicated the Lower Morrow Sandstones and Keyes Sandstones would not be prospective at this location, the well was drilled to a total depth approximately 125 feet below the Upper Morrow Sandstone.

The Blout No. 5-5 is located approximately 15 miles north Elkhart, Kansas just west of Kansas Highway 27. The Mustang Field is located on the western edge of the Hugoton Embayment in west central Morton County in extreme southwestern Kansas.

The Blout No. 5-5 was spudded on January 30, 2003 and was drilled without problems to a RTD of 4,750 feet. Production casing was set on February 7, 2003. No drill stem tests were run in this well. It was under 24-hour geological supervision and mud gas detection (hotwire and chromatograph) from 2,500' to 4,750' RTD. Ten-foot (10') wet and dry drilling samples were caught from 2,500' to 4,590' (with five foot samples caught from 4,590' to 4,617') by the drilling crews and lagged to true depth by the consulting wellsite geologist.

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Hydrocarbon Shows

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Very good hydrocarbon sample shows and mud gas increases were recorded over the Upper Morrow Sandstone benches from 4,588'-4,594', 4,603'-4,609', and 4,614'-4,618'. Complete detailed hydrocarbon sample shows and associated mud gas increases can be found in the "Zones of Interest" section of this report.

An extremely significant excellent mud gas increase was recorded over a Lansing Formation Zone from 3,634' to 3,639' recording a hotwire total gas increase to 310 units (chromatograph readings of C₁=124 units, C₂=34 units, and C₃=10 units). This Lansing Zone is undeveloped in the surrounding Blout No. 2-5, Blout No. 6-5, and Hanke No. 1-5 wells and is unique to the Blout No. 5-5.

Several significant total gas increases of interest were recorded over porosity zones in the Wabaunsee Formation from 2,698'-2,703' (60 unit increase to 82 units total) and 2,868'-2,876' (66 unit increase to 104 units total), the Topeka Formation from 2,901'-2,905' (58 unit increase to 86 units total) and 3,031'-3,039' (54 unit increase to 64 units total).

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Structure/Stratigraphy

As compared structurally to Reference Well "A"/Dominion Blout No. 2-5, the Blout No. 5-5 ran structurally flat (Wabaunsee Formation) to structurally high (Topeka through the Upper Morrow Sandstone Formations), ranging from +4 feet to +18 feet high. Compared to Reference Well "B"/Dominion Blout No. 6-5, the Blout No. 5-5 ran structurally low from the Topeka (-5 feet) through the Upper Morrow Sandstone (-39 feet), with the exception of the Wabaunsee Formation which is +1 foot high.

Complete Formation Tops picks and structural comparisons to Reference Wells "A" and "B" can be found in the "Formation Tops" table within this geologic report.

Summary

The Blout No. 5-5 was drilled as a development well on the eastern edge of the Mustang East Field attempting to extend Upper Morrow Sandstone oil and gas production. As expected, the Blout No. 5-5 did encounter the Upper Morrow Sandstone structurally high (+18 feet) to the Dominion Blout No. 2-5/Reference Well "A" and structurally low (-39 feet) to the Dominion Blout No. 6-5/Reference Well "B". The Upper Morrow Sandstone consists of 3 thin well developed benches of sandstone covering a 30-foot thick gross interval.

Therefore, based on the presence of the Upper Morrow Sandstone, it's favorable structural position compared to the Reference Wells, the very good hydrocarbon sample shows observed, the corresponding very good mud gas increases recorded, and the confirming electric log analysis, plus the favorable reservoir development and excellent mud gas increase of the Lansing Zone, production casing was set to further test and produce the Upper Morrow Sandstone.

Respectfully Submitted,



Richard J. Hall
Certified Petroleum Geologist
Wellsite Consulting Geologist
Whitehall Exploration

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