

# Geological Report

For

**Para et al Cameron E-52**  
**Surface Location: Unit E Section 52**  
**Grid 60° 10' 117° 15'**  
**UWI: 300E526010117150**  
**NEB ADW WID #: 2074**



**Well Reached Total Depth on**  
**March 2011**

**Report For:**

**Jason Galbraith**  
**Geologist**  
**Paramount Resources Ltd.**  
**Calgary, Alberta**

**Reported By:**



**Mashhood A Chaudhry**



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**Moh & Associates Oilfield Consultants Ltd.**  
**Calgary, Alberta.**

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## WELL ABSTRACT

The well Para et al Cameron E-52 is located in Cameron Hills field of NWT Mainland. The main objective of drilling this well is to investigate Sulphur Point Dolomite for the production of hydrocarbons and to confirm the structure.

The drilling contractor engaged to drill this well was Nabors *Drilling Rig # 24*. The well was spudded on February 06, 2011 at 1800 hrs. A surface hole of the size of 311mm was drilled to 366.8m, and a surface casing of 244.5mm was run. The rig was shut down from 9 to 5<sup>th</sup> of February, 2011. Rig was then moved out on February 16, 2011 to finish 2H-03 well. The Rig was moved back to E-52 on 21<sup>st</sup> of March 2011 to complete drilling of this well. Surface casing cement was drilled out and drilling of 200mm main hole started on March 23<sup>rd</sup>, 2011. The well was TD at 1418m on March 29, 2011.

The geological formations were identified after detailed examination of drill cuttings and correlation of offset logs. The formation tops were right on prognosis.

Open hole logs were run on March 30, 2011 by Weatherford Wireline services. Production casing was run to test the well for oil.



## FORMATION EVALUATION

### SLAVE POINT FORMATION

*Middle or Upper Devonian*

*397.5-385.3 Million Years*

**Slave point** in this well was picked in samples at 1315.4m. Electrical logs indicate its top at 1313.5m (SS -564.14m). Slave Point is a 42.5m thick limestone. It is brown, mudstone-wackestone, micritic, lumpy, dense, cryptocrystalline-very fine crystalline. It becomes slightly dolomitic and anhydritic towards lower part. The Slave point is mostly tight with 0-3% porosity. It has a local 3-9% pin point and earthy porosity. Slave point has hydrocarbon shows and gives milky white streaming cut with petroliferous odour. A formation gas show of 120 units against a background of 30 units was recorded by gas detector at 1337m depth.

The Slave Point formation in this well does not appear to have commercially producible hydrocarbons.



Slave Point Limestone 1430-1435m MD -E-52



**SULPHUR POINT FORMATION***Middle Devonian**397.5 Million Years*

**Sulphur Point Limestone** is 17m thick, from 1368.5m (SS- 619.14m) to 1385.4M (SS - 636.04m), as seen on the logs. It is brown-buff, mudstone-wackestone, micritic, cryptocrystalline-trace very fine crystalline, argillaceous and locally slightly dolomitic. It also has some hydrocarbon shows. Generally it has 3% porosity with local streaks of 6-9% porosity.

Sulphur Point Limestone does not seem to be promising in this well.



Sul Pt. Lst. 1370-1375m MD in E-52

**Sulphur Point Dolomite** top was encountered at 1385.4m (SS -636.04m). It is brown-dark brown grainstone-packstone and is very fine-minor fine crystalline, with occasional



free crystals and trace bitumen partings. It has intercrystalline and pin point porosity in the range of 3-6%. Logs show 17% porosity and around 11ohms deep induction from 1492.5 to 1493.5m depth. The dolomite is oil stained and gives yellow white good streaming cut. It also gives moderate petroliferous odour. It had a very weak gas show of 60/12 units at 1393.5m.

The Dolomite in this well may have some potential of oil production.



Sul Pt Dolomite 1387.5-1390.0m MD in E-52





Sul Pt Dol 1390-1395m MD in E-52

**SUMMARY OF WELL DATA**

OPERATOR	Paramount Resources Ltd.
WELL NAME	Para et al Cameron E-52
SURFACE LOCATION	Unit E Section 52 Grid 60° 10' 117° 15'
SURFACE COORDINATES	Lat 60° 01' 26.0" Long 117° 25' 53.3"
BOTTOM HOLE COORDINATES	Same As Surface.
UWI	UWI: 300E526010117150
FIELD	Cameron Hills
PROVINCE/REGION	NWT Mainland
WELL LICENCE NUMBER	2074
WELL TYPE	Vertical.
A.F.E. NUMBER	10N110008
GROUND ELEVATION	744.20m
K.B. ELEVATION	749.36m
DRILLING CONTRACTOER	Nabors Drilling Rig # 24
SPUD DATE	FEB. 06, 2011@ 1800hrs
COMPLETED DRILLING	MAR. 29, 2011@ 0645h
TOTAL DEPTH DRILLER	1418m.
TOTAL DEPTH LOGGERS	1417m
SURFACE HOLE SIZE	311 mm.
INTERMEDIATE HOLE SIZE	- mm.
MAIN HOLE SIZE	200 mm.



SAMPLES For PARAMOUNT  
RESOURCES LTD.

None.

SAMPLES FOR NEB

1275m MD to TD, 2 sets of vial and  
one set of unwashed bags.

#### CASING RECORD

Size OD (mm)	Size ID (mm)	Weight Kg/m	Make	Type	Grade	Shoe at (m)	No Of Joints	Remarks
219.1	201.2	47.62	Evraz	ST&C	H-40	366.7	27	Surface

#### LOGS RUN

Company	Log Type	Interval ( m )
<b>Weatherford Wireline Services</b>	1.Spectral Pe Density Compensated Neutron Gamma Ray Log	1394.2-0.0
	2. Simultaneous Tripple Induction SFL Log	1414.9-367.1
	3. Monopole-Dipole Acoustic log	1402.6-367.1
	4. Micro-Resisitivity Log	1383.6-1300.0

**STATUS: POTENTIAL SULPHUR POINT OIL WELL.**

**SUMMARY OF GEOLOGICAL MARKERS, TESTS & CORES****GEOLOGICAL MARKERS****K.B: 749.36m**

<b>FORMATION MARKER</b>	<b>SAMPLE TOP</b>		<b>LOGS TOP</b>		
	<b>TMD (m)</b>	<b>TVD (m)</b>	<b>TMD (m)</b>	<b>TVD(m)</b>	<b>Subsea (m)</b>
<b>WABAMUN</b>				<b>546.5</b>	<b>202.86</b>
<b>JEAN MARIE</b>				<b>678.5</b>	<b>70.86</b>
<b>FORT SIMPSON</b>				<b>689.0</b>	<b>60.36</b>
<b>TWIN FALLS</b>				<b>802.5</b>	<b>-53.14</b>
<b>HAY RIVER</b>				<b>957.5</b>	<b>-208.14</b>
<b>BEAVERHILL LAKE</b>		<b>1291.0</b>		<b>1290.5</b>	<b>-541.14</b>
<b>SLAVE POINT</b>		<b>1315.4</b>		<b>1313.5</b>	<b>-564.14</b>
<b>F 4</b>		<b>1356.0</b>		<b>1356.0</b>	<b>-606.64</b>
<b>WATT MOUNTAIN</b>		<b>1363.5</b>		<b>1362.5</b>	<b>-613.14</b>
<b>SULPHUR POINT LST</b>		<b>1371.5</b>		<b>1368.5</b>	<b>-619.14</b>
<b>SULPHUR POINT DOL.</b>		<b>1382.0</b>		<b>1385.4</b>	<b>-636.04</b>
<b>MUSKEG</b>		<b>1394.5</b>		<b>1394.5</b>	<b>-645.14</b>
<b>TOTAL DEPTH DRILLER</b>		<b>1418.0</b>		<b>1418.0</b>	<b>-668.00</b>
<b>TOTAL DEPTH LOGGERS</b>		<b>1417.0</b>		<b>1417.0</b>	<b>-667.0</b>

**CORES****DATE:**

<b>Formation</b>	<b>Interval (m )</b>	<b>Recovered.</b>	<b>Recovery %</b>	<b>Coring Equip.</b>

**SIDE WALL CORING SUMMARY****CORING DATE:**

<b>Plug #</b>	<b>Time</b>	<b>Depth(m)</b>	<b>Recovery</b>	<b>Plug #</b>	<b>Time</b>	<b>Depth(m)</b>	<b>Recovery</b>



**DEVIATION SURVEYS**

DEPTH (m)	DEVIATION DEG.	DEPTH (m)	DEVIATION DEG.	REMARKS
39	0.0			
64	0.0			
94	0.0			
128	0.5			
181	0.5			
219	0.5			
266	0.5			
324	0.5			
391	1.0			
420	1.0			
498	0.5			
595	1.0			
642	0.5			
710	1.0			
777.8	1.0			
855.3	1.0			
932.6	1.0			
1000.5	1.0			
1066.0	0.5			
1136.1	0.5			
1213.5	1.0			
1281.1	1.0			
1358.4	0.5			
1414.0	1.0			

## DAILY DRILLING OPERATIONS SUMMARY

### Para et al Cameron E-52

Date	Depth m.		Progress	Daily Operations Summary
	From	To		
05-Feb-11	0	0	0	Completed nipple down of BOPS on 2H-03. Tear down rig. Moved Rig and shacks to E-52. Spotted shacks and the rig loads. Started rig up.
06-Feb-11	0	58	58	Finished rig up. Welding work. Electricians fixed derrick lighting. Well spudded @ 1800 hrs. Drilled 311mm surface hole from 10 to 58m. Rig up Gas detector.
07-Feb-11	58	315	257	Drilled 311mm surface hole from 58 to 315m.
08-Feb-11	315	367	52	Drilled 311mm surface hole from 315 to 356m. Wiper trip. Drilled to 366.8m. Circulate. POOH. Ran surface casing. Started cementing casing.
09-Feb-11	367	367	0	Cement casing. POOH. Rig Shut down from 9 to 16th of Fe. Left wellsite. Arrived in Calgary.
22-Mar-11	367	367	0	March 21: Moved the rig and trailers to E-52. Spotted trailers and substructure. Wait on day light. March 22: Wait on day light. Spot rig loads. Rig up various components of the rig. Raised derrick. Changed heads and liners in mud pump. Start nipple up BOPS.
23-Mar-11	367	367	0	Finished nipple up BOPS. Performed pressure tests. Rig up flare and degasser lines. Cut and slip. Levelled rig. Made BHA. RIH. Drilled cement from 351 to 360m. Rig up Total Gas detector.
24-Mar-11	367	629	262	Drilled cement from 360 to 367m. Drilled 200mm main hole from 367 to 629m. Worked tight hole at 539m depth. Rig out damaged Gas detector from Total Gas Detection.
25-Mar-11	629	858	229	Drilled 200mm main hole from 629 to 858m. Pason Technician rig up Pason Gas detector.
26-Mar-11	858	1129	271	Drilled 200mm main hole from 858 to 1129m.
27-Mar-11	1129	1314	185	Drilled 200mm main hole from 1129 to 1246m. Displaced well from floc water to Polymer mud at 1246m. Drilled 200mm main hole to 1314m. Circulate bottoms up. POOH for bit from 1314 to 85m.
28-Mar-11	1314	1391	77	POOH from 85 to surface. Made up bit, RIH to bottom. Reamed from 1302 to 1314m. Drilled 200mm main hole 1314 to 1391m.
29-Mar-11	1391	1418	27	Drilled 200mm main hole 1391 to 1418m. Circulate hole clean. Wiper trip to 262m. RIH to bottom. Ream and clean from 1314 to 1418m. Circulated and conditioned mud for logging. POOH to surface.
30-Mar-11	1418	1418	0	Rig up Loggers. Ran first run of logs. Bridged off @ 1387m while running in for second run of logs. POOH with logging tools. RIH for clean out trip. Reamed and washed from 1372 to 1418m. Circulate on bottom. POOH for second run of logs. RIH with logging tools.
31-Mar-11	1418	1418	0	Finished second run of logs. Left wellsite. Stayed overnight in White Court.
01-Apr-11	1418	1418	0	Left Whitecourt. Arrived in Calgary.



**PARA ET AL CAMERON E-52**  
**Unit E Section 52**  
**Grid 60° 10' 117° 15'**

**SAMPLE RECORD**

KB: 749.36m

1270-1275 SHALE 100% light grey to greenish grey, part black brown, fine-rough, medium hard-hard, micromicaceous, part slightly silty and sandy, calcareous, trace limestone, rare sandstone, trace pyritic, fissile-subfissile, part splintery, black brown gives cut.

1275-1280 SHALE 100% light grey to greenish grey, part black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace limestone, trace pyritic, fissile-subfissile, part splintery, black brown black gives cut.

1280-1285 SHALE 100% grey, black, black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, trace pyritic, fissile-subfissile, part splintery, black brown gives cut. TRACES LIMESTONE light grey, light brown, mudstone, micritic, dense, microcrystalline-minor very fine crystalline, tight, 0-3% earthy porosity, no shows.

1285-1290 SHALE 100% grey, black, black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, pyritic, fissile-subfissile, part splintery, black brown gives cut. TRACES LIMESTONE light grey, mudstone-wakestone, micritic, dense, microcrystalline-minor very fine crystalline, part argillaceous, tight, 0-3% earthy porosity, no visible shows.

**TOP BEAVERHILL LAKE 1291m (SS -541.64m)**

1290-1295 SHALE 950% grey, black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, pyritic, fissile-subfissile, part splintery, black brown gives cut. LIMESTONE 05% light grey, mudstone, micritic, dense, microcrystalline-trace very fine crystalline, part argillaceous, trace pyritic, tight, 0-3% earthy porosity, no visible shows.

1295-1300 SHALE 90% grey, part black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, pyritic, fissile-subfissile, part splintery, black brown gives cut. LIMESTONE 10% light grey, rare light brown, mudstone, micritic, dense, microcrystalline-trace very fine crystalline, part argillaceous, trace pyritic, tight, 0-3% earthy porosity, no visible shows.

1300-1305 SHALE 80% grey, minor black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, pyritic, fissile-subfissile, part splintery. LIMESTONE 20% light grey, mudstone, micritic, dense, microcrystalline-minor very fine crystalline, part argillaceous, pyritic, tight, 0-3% earthy porosity, no visible shows.

1305-1310 SHALE 70% grey, minor black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, trace marly, pyritic, fissile-subfissile, part splintery. LIMESTONE 30% light grey, rare tan, mudstone, micritic, dense, microcrystalline-minor very fine crystalline, minor argillaceous, pyritic, rare free crystals, tight, 0-3% earthy porosity, no visible shows.

1310-1314 SHALE 60% grey, minor black brown, fine-rough, medium hard-hard, micromicaceous, black brown is slightly silty and sandy, calcareous, pyritic, fissile-subfissile, part splintery. LIMESTONE 40% light grey, rare brown, mudstone, micritic, dense, microcrystalline-minor very fine crystalline, minor argillaceous, pyritic, rare free crystals, tight, 0-3% earthy porosity, no visible shows.

BIT TRIP @ 1314m FROM 1830 HRS ON MARCH 27 TO  
0700HRS ON MARCH 28, 2011.

1314-1315 SHALE 100% Poor sample after bit trip. Shale as above. Minor Limestone, light grey, as above.

TOP SLAVE POINT 1315.4m (SS -566.04m)

1315-1320 SHALE 80% as above. LIGHT GREY LIMESTONE 10% as above. LIMESTONE 10% brown, mudstone, micritic, dense-lithographic, cryptocrystalline-trace very fine crystalline, tight, 0-3% earthy porosity, no visible to very poor cut.

1320-1325 LIMESTONE 60% brown, mudstone-wakestone, micritic, part dense, cryptocrystalline-part very fine crystalline, trace pyrite, tight, 0-3% earthy porosity, yellow white fair-good streaming cut, gives pertoliferous odour.

1325-1330 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, dense, cryptocrystalline-part very fine crystalline, trace pyrite, tight, 0-3% earthy porosity, yellow white fair-good streaming cut, gives pertoliferous odour.



1330-1335 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, dense, cryptocrystalline-part very fine crystalline, tight, estimated 0-3% earthy porosity, even oil staining, yellow white good streaming cut, gives petroliferous odour.

1335-1340 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, dense, cryptocrystalline-minor very fine crystalline, trace pyrite nodules, estimated 3-6% earthy and intercrystalline porosity, yellow white good streaming cut, gives petroliferous odour.

1340-1345 LIMESTONE 100% brown, mudstone-wakestone, micritic-granular, lumpy, cryptocrystalline-very fine crystalline, trace pyrite nodules, rare dolomitic, estimated 3-6% intercrystalline and earthy porosity, yellow white good streaming cut, gives petroliferous odour.

1345-1350 LIMESTONE 100% brown, mudstone-wakestone, micritic-granular, lumpy, cryptocrystalline-very fine crystalline, trace dolomitic, estimated 3% intercrystalline and earthy porosity, yellow white good streaming cut. Trace Anhydrite.

1350-1355 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, cryptocrystalline-very fine crystalline, trace dolomitic, estimated 3% intercrystalline and earthy porosity, yellow white good streaming cut. occasional dolomite and anhydrite chips.

#### TOP F-4 1356m (SS -606.64m)

1355-1360 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, cryptocrystalline-minor fine crystalline, minor dolomitic, estimated 3% intercrystalline and earthy porosity, poor slow cut. MINOR DOLOMITE dark brown, wakestone, microcrystalline-very fine crystalline, estimated 3-9% intercrystalline and pin point porosity, yellow white poor streaming cut. occasional anhydrite chips.

#### TOP WATT MTN 1363.5m (SS -614.14m)

1360-1365 LIMESTONE 100% brown, mudstone-wakestone, micritic, lumpy, cryptocrystalline-minor fine crystalline, part dolomitic, estimated 3-6% pin point and earthy porosity, poor slow cut. MINOR ANHYDRITE white, tan, very hard, dense. Traces calcareous Dolomite. SHALE 5% green, waxy-silky, medium hard-hard, micaceous, calcareous, traces pyrite nodules, fissile-blocky.

1365-1370 SHALE 60% green, waxy-silky, medium hard-hard, micaceous, calcareous, pyretic, traces pyrite nodules, fissile-blocky. LIMESTONE 30% brown, mudstone-wakestone, micritic, lumpy, dense, cryptocrystalline-minor very fine crystalline, traces pyretic, estimated 3% earthy and pin point porosity, milky white good streaming cut. Trace dolomite. Grey Shale caving.

#### TOP SULPHUR PT. LIMESTONE 1371.5m (SS -622.14m)

1370-1375 LIMESTONE 70% brown, buff, mudstone-wackestone, micritic, lumpy, dense, cryptocrystalline-traces very fine crystalline, trace pyrite, estimated 3% earthy and pin point porosity, yellow white fair streaming cut. gives petroliferous odour. SHALE 30% caving, green and grey.

1375-1380 LIMESTONE 80% brown, buff, mudstone-wackestone, micritic, lumpy, dense, cryptocrystalline-traces very fine crystalline, trace pyrite, trace dolomitic, estimated 3% earthy and pin point porosity, yellow white good streaming cut. gives petroliferous odour. SHALE 20% caving, green and grey.

#### TOP SULPHUR PT DOLOMITE 1382m (SS -632.64m)

1380-1382.5 LIMESTONE 100% as above. MINOR DOLOMITE brown, grainstone-packstone, very fine-minor fine crystalline, slightly calcareous, estimated 3-6% intercrystalline and pin point porosity, yellow white good streaming cut.

1382.5-1385 LIMESTONE 60% as above. DOLOMITE 40% brown, grainstone-packstone, very fine-minor fine crystalline, slightly calcareous, estimated 3-6% intercrystalline and pin point porosity, even oil staining, yellow white good streaming cut. Gives petroliferous odour.

1385-1387.5 DOLOMITE 70% brown, grainstone-packstone, very fine-minor fine crystalline, trace pyrite, rare free crystal, estimated 3-6% intercrystalline and pin point porosity, even oil staining, yellow white good streaming cut. Gives petroliferous odour. LIMESTONE 30% as above.

1387.5-1390 DOLOMITE 100% brown, grainstone-packstone, very fine-minor fine crystalline, trace pyrite, rare free crystal, estimated 3-6% intercrystalline and pin point porosity, even oil staining, yellow white good streaming cut. Gives petroliferous odour.

1390-1395 DOLOMITE 100% brown, grainstone-packstone, very fine-minor fine crystalline, trace pyrite, trace free crystals, estimated 3-6% intercrystalline and pin point porosity, even oil staining, yellow white good streaming cut. Gives petroliferous odour.

#### TOP MUSKEG 1394.5m (SS -645.14m)

1395-1400 DOLOMITE 100% brown, grainstone-packstone, very fine-minor fine crystalline, trace pyrite, trace free crystals, estimated 3-6% intercrystalline and pin point porosity, even oil staining, yellow white good streaming cut. MINOR ANHYDRITE white, cream, white, dense, cryptocrystalline, hard.

1400-1405 DOLOMITE 80% brown, dark brown, grainstone, very fine-fine crystalline, part anhydritic, estimated 3% intercrystalline and pinpoint porosity, no visible-poor cut. ANHYDRITE 20% white, off white, cream, dense, cryptocrystalline, hard.

1405-1410 DOLOMITE 90% brown, dark brown, grainstone, very fine-fine crystalline, abundant shale, anhydritic, estimated 3% intercrystalline and pinpoint porosity, yellow white fair cut. ANHYDRITE 10% white, off white, cream, dense, cryptocrystalline, hard.

1410-1415 DOLOMITE 95% brown, dark brown, grainstone, very fine-fine crystalline, anhydritic, traces coal, rare pyrite nodule, estimated 3% intercrystalline and pinpoint porosity, yellow white good streaming cut. ANHYDRITE 5% white, off white, cream, dense, cryptocrystalline, hard.

1415-1418 DOLOMITE 95% brown, dark brown, grainstone, very fine-fine crystalline, anhydritic, estimated 3% intercrystalline and pinpoint porosity, yellow white fair- good streaming cut. ANHYDRITE 5% white, off white, cream, dense, cryptocrystalline, hard.

TD 1418m (SS – 668.64m) REACHED ON MARCH 29, 2011 @ 0645 HRS.

**BIT RECORD**

Bit No	Size mm	Make	Type	Sr. #	Depth IN/Out (m)	Bit Mtrs	Bit Hrs	Wt Da N 100 0	RPM	Cumul. Hrs	Remarks
1	311	King Dream	HTO9 GC	L26207	0000/0367	367	28.00	11	155		Surf. Hole
2	200	Reed	DSR 513	119825	0367/1314	947	64.75	1.5-12.5	75-116		Intermed. Hole
3	200	Reed	RO9A M	DN2419	1314/1418	104	2025	13-15	62-77		
4	222	Reed	R20A MP	W30040	1240/1333	093	10.50	10-12	25-40		



## MUD RECORD

[illegible]

## **ENCLOSURES**

The following are enclosed as part of this report:

1. Geological Strip Log.
2. CD.

**DISTRIBUTION**

The ORIGINAL and FIVE copies of the geological report on Para et al Cameron E-52 have been completed. The ORIGINAL and FOUR copies of the report are being forwarded to Paramount Resources Ltd. and the remaining copy is being retained by Moh & Associates Oilfield Consultants Ltd.

Respectfully,



Moh Sahota, B.Sc. (Hons.), M.Sc. (Geology)  
President  
Moh and Associates Oilfield Consultants Ltd.