



**WHITEHALL EXPLORATION**

**WELLSITE GEOLOGICAL CONSULTING**

**GEOLOGICAL ANALYSIS & WELL REPORT**

**H & M Petroleum Corp.**

**Van Fleet No. 1**

330' FSL & 1,650' FEL

SE-SW-SE

Section 4-Township 1 South-Range 27 West

Decatur County, Kansas

March 25, 2008

RECEIVED  
KANSAS CORPORATION COMMISSION  
APR 13 2008  
CONSERVATION DIVISION  
WICHITA, KS

4 - 1 - 27 W

## **GENERAL INFORMATION**

Elevation: G.L. 2,599' K.B. 2,604'  
All measurements are from K.B.

Field: Wildcat

Drilling Contractor/Rig No.: WW Drilling/Rig 4

Total Depth: RTD: 3,680' LTD: 3,681'

Surface Casing: 8 5/8" @ 248'

Production Casing: 5 1/2" set

Drill Time Kept: 3,050'-3,680' RTD

Samples Examined: 3,100'-3,680' RTD

Geological Supervision: 3,050'-3,680' RTD

Wellsite Geologist: Richard J. Hall - CPG No. 5820  
Consulting Wellsite Geologist-  
Whitehall Exploration

Drill Stem Tests: 2 Open Hole Tests: -Lansing "A" Zone  
-Kansas City "H-K" Zone's

Mud Company/Mud Type: Morgan Mud/Chemical

Electric Logging Company: Log-Tech

Log Suite: -Dual Induction  
-Compensated Neutron/Density Porosity  
-Microlog

Samples: Dry cut split & sent to Kansas Geological Survey  
Sample Library in Wichita, KS

Total Depth Formation: Granite Wash

Well Status: Production casing set to test the Lansing/Kansas  
Group Zone's

## DAILY DRILLING CHRONOLOGY

<u>2007 Date</u>	<u>7:00 A.M. Depth</u>	<u>24 Hour Footage</u>	<u>7:00 A.M. Operation; 24 Hour Activity</u>
03/12/08	0	0	MIRU; spud @ 1:00 P.M., drill rat hole, drilling, condition mud/circ. @ 249', TOO H, RU & run 6 jts of 8 5/8" surf. csg. set @ 248', cement csg. w/175 sx, plug down @ 6:30 P.M., WOC 8', drill out cement @ 2:30A.M.-3/13/08, drilling.
03/13/08	530'	530'	Drilling ahead; lose 30 bbls mud @ 817', jet-run flush @ 817', drilling, jet, drilling, lose 80 bbls mud @ 1,100', drilling, lose 40 bbls mud @ 1,650', drilling.
03/14/08	2,200'	1,670'	Drilling ahead; jet, drilling, jet, clean suction, mud up/displace @ 2,946', drilling.
03/15/08	3,040'	840'	Drilling ahead; CFS @ 3,273', drilling, 1.25' rig repair-replace chain, drilling, CFS @ 3,315', short trip 22 stands (2.25'), circ. 1', TOO H, PU test tool, TIH, run DST No. 1, TOO H.
03/16/08	3,315'	275'	Tripping out of hole w/DST No.1; lay down test tool, TIH w/bit, break circ., drilling, jet, drilling, CFS @ 3,395', drilling, CFS @ 3,494', TOO H, PU test tool, TIH, run DST No. 2, TOO H.
03/17/08	3,494'	179'	Tripping out of hole w/DST No.2; lay down test tool, TIH w/bit, break circ.-ream 20' to bottom, drilling reach 3,680' RTD @ 9:45 P.M., short trip 5 stands, circ. 1.5', TOO H, WO loggers 1', RU and run Log-Tech logs, RD loggers, wait on orders.
03/18/07	3,680'	186'	Tripping in hole w/bit; break circ., ream 12' to bottom, circ., TOO H laying down drill pipe, RU csg. crew and run 5 1/2" prod. csg., cement csg., rig released.

## DEVIATION SURVEYS

<u>Depth</u>	<u>Deviation (Degrees)</u>	<u>Depth</u>	<u>Deviation (Degrees)</u>
215'	0.25	3,680'	1.00
3,315'	0.75		

## REFERENCE WELLS

Reference Well "A": John O. Farmer, Inc.  
Walters No. 1  
C-SW-SW  
Section 4-T1S-R27W  
Decatur County, Kansas  
Elevation: 2,550' KB  
LTD: 3,554'  
Drilled: November, 1970  
TD Formation: Reagan Sandstone  
Status: Abandoned LKC "A", "B" and "H" Zone's oil well

Reference Well "B": Cities Service Oil Co.  
Van Fleet No. 1  
NW-NE-NW  
Section 9-T1S-R27W  
Decatur County, Kansas  
Elevation: 2,561' KB  
LTD: 3,606'  
Drilled: May, 1956  
TD Formation: Granite  
Status: Abandoned LKC "A", "H" and "J" Zone's oil well

Reference Well "C": Cities Service Oil Co.  
Hendricks No. 1  
SW-SW-NE  
Section 9-T1S-R27W  
Decatur County, Kansas  
Elevation: 2,570' KB  
LTD: 3,641'  
Drilled: November, 1957  
TD Formation: Reagan Sandstone  
Status: Dry & Abandoned

**FORMATION TOPS**

	Van Fleet No. 1			Walters No. 1	Van Fleet No.1	Hendricks 1			
FORMATION	SAMPLE	ELECTRIC LOG		REFERENCE	REFERECE	REFERENCE	DIFFERENCE TO		
	TOPS	TOPS	DATUM	WELL "A"	WELL "B"	WELL "C"	WELL "A"	WELL "B"	WELL "C"
PERMIAN									
Anhydrite	2010	2008	+596	+618	+608	+597	-22	-12	-1
PENNSYLVAN- IAN									
Topeka	3109	3108	-504	-472	-471	-501	-32	-33	-3
Heebner Shale	3264	3269	-665	-630	-633	-660	-35	-32	-5
Lansing "A"	3301	3311	-707	-670	-673	-704	-37	-34	-3
Base/Kansas City	3522	3523	-919	-886	-889	-919	-33	-30	Flat
Reagan Sand	3608	3613	-1009	-997	-1006	-1042	-12	-3	+33
Granite Wash	3634	3648	-1044	NDE	-1029	-1066	NA	-15	+22

## ZONES OF INTEREST

<u>Formation</u>	<u>Log Depth</u>	<u>Lithologic &amp; Show Descriptions, Remarks</u>
Lansing "A"	3,311'-3,316'	<p>Limestone, light gray-buff, very fine crystalline with some fine crystalline/slightly fossiliferous in part, hard, scattered oolites, fair-good in part inter-crystalline porosity, VERY GOOD SHOW: no odor, poor pale yellowish fluorescence, mostly even-near saturated dark brown oil stain, fair-very good show free dark brown oil droplets/broken, very good streaming yellow cut, very good milky cut and excellent yellow/gold dried residual halo cut.</p> <p>This zone was isolated on Drill Stem Test No. 1 testing tight recovering 5 feet of mud with shut in pressures of 865-992 p.s.i.</p> <p>Log-Tech logs show this zone has a moderately shaley gamma ray at the top of the zone becoming cleaner with depth, 7.5-8% density porosity and 8-10% neutron porosity, fair SP development, no microlog, and has 6-20 ohms deep resistivity.</p>
Lansing "B"	3,351'-3,355'	<p>Limestone, light gray, fine in part-predominately very fine crystalline, hard, tight in part, minor slightly chalky in part, some poor-mostly fair inter-crystalline porosity, some with no visual porosity, FAIR-GOOD SHOW: no odor, trace dull fluorescence, uneven-near saturated dark brown oil stain, fair show free brown oil/broken, good pale yellow slow streaming cut, grading to good moderately bright milky cut, very good gold/yellow dried residual halo cut.</p> <p>This zone was not drill stem tested.</p> <p>Log-Tech logs show this zone has a clean gamma ray, 10-11% density porosity and 10-11% neutron porosity, fair SP development, microlog development from 3,352-3,355 feet, and has 8-20 ohms deep resistivity.</p>
Lansing "H"	3,397'-3,404'	<p>Limestone, light gray-buff, fine in part-predominately very fine crystalline, hard-dense, clean, some very oolitic, occasional pyritic in part, scattered vugs, fair-intermediate inter-crystalline porosity, GOOD SHOW: no odor, good spotty/uneven bright</p>

yellow fluorescence and brown oil stain, good show bleeding oil, slight-fair show free dark brown oil/broken, good medium streaming bright yellow live cut, very good bright yellow milky cut, very good yellow dried residual halo cut.

This zone was included on Drill Stem Test No. 2 with the Lansing "I", "J" and "K" Zone's and recovered 60 feet of gas in pipe and 145 feet of oily mud (45% oil, 55% mud) with shut in pressures of 918-979 p.s.i.

Log-Tech logs show this zone has a clean gamma ray, maximum 7% density porosity, 7-9.5% neutron porosity, intermediate SP development, 2 feet of very slight/trace microlog development, and has 8-17 ohms deep resistivity.

Kansas City "I" 3,428'-3,433'

Limestone, light gray/very slightly greenish-buff, very fine with some fine crystalline in part, dense, tight in part, some chalky, moderately oolitic in part, some mottled, poor-fair inter-crystalline porosity, good in part slightly vuggy porosity, INTER-MEDIATE-GOOD SHOW: no odor, dull yellowish to bright yellow fluorescence, good spotty-uneven dark brown-black oil stain, fair-good show free brown oil droplets/broken, fast streaming bright yellow cut grading immediately to fair milky yellow cut, excellent bright yellow dried residual halo cut.

This zone was included on Drill Stem Test No. 2 which covered the Kansas City "H"- "K" Zones and tested 60 feet of gas in pipe and 145 feet of oily mud (45% oil, 55% mud) with shut in pressures of 918-979 p.s.i.

Log-Tech logs show this zone has a clean gamma ray, maximum 5% density porosity, maximum 7.5% neutron porosity, poor SP development, no microlog development, and has 8-17 ohms deep resistivity.

Kansas City "J" 3,464'-3,467'

Limestone, buff-tan, fine-very fine crystalline, hard, very oolitic with abundant inter-oolitic vug development, some pieces with good oolitic shoal development, slightly-moderately chalky, rare pyrite inclusion, fair-good inter-crystalline porosity, very good vuggy porosity/inter-oolitic matrix vugs, GOOD SHOW: no odor, dull greenish fluorescence,

uneven-mostly even/near saturated dark brown oil stain, fair disseminated show free brown oil/broken, intermediate slow streaming/ milky cut, excellent bright yellow dried halo cut.

This zone was included on Drill Stem Test No. 2 which covered the Kansas City "H"- "K" Zones and recovered 60 feet of gas in pipe and 145 feet of oily mud (45% oil, 55% mud) with shut in pressures of 918-979 p.s.i.

Log-Tech logs show this zone has a clean gamma ray, 5-11.5% density porosity and 6-10.5% neutron porosity, intermediate SP development, 2 feet of microlog development from 3,465-3,367 feet, and has 18+ ohms deep resistivity.

Kansas City "K" 3,494'-3,502'

Limestone, buff-light gray, very fine-fine crystalline, hard, moderately chalky, fair-medium inter-crystalline porosity, INTERMEDIATE SHOW: no odor, fair pale dark yellow fluorescence, spotty-uneven dark brown-black oil stain, fair show free brown oil/broken, slight-fair slow yellow streaming/ milky cut, very good yellow dried halo cut.

This zone was included on Drill Stem Test No. 2 which covered the Kansas City "H"- "K" Zones and recovered 60 feet of gas in pipe and 145 feet of oily mud (45% oil, 55% mud) with shut in pressures of 918-979 p.s.i.

Log-Tech logs show this zone has a very clean gamma ray, 8-13% density porosity and 8% neutron porosity, intermediate SP development, 3.5 feet of microlog development from 3,498.5-3,502 feet, and has 8-30+ ohms deep resistivity.





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

H&M Petroleum  
731 N. Weber  
Suite 200  
Colorado Springs, CO 80903  
ATTN: Rick Hall

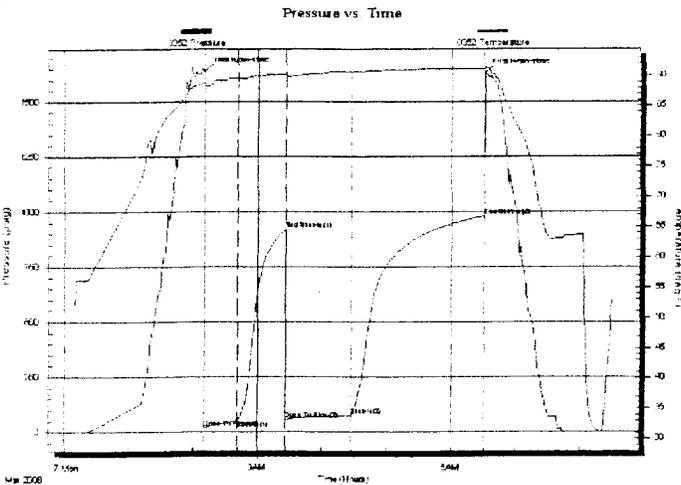
**Van Fleet #1**  
**4-1s-27w-DC-KS**  
Job Ticket: 31605      DST#: 2  
Test Start: 2008.03.17 @ 00:10:00

## GENERAL INFORMATION:

Formation: **Lansing "D-F"**  
Deviated: **No** Whipstock: **ft (KB)**  
Time Tool Opened: **02:11:10**  
Time Test Ended: **08:32:00**  
Interval: **3386.00 ft (KB) To 3494.00 ft (KB) (TVD)**  
Total Depth: **3494.00 ft (KB) (TVD)**  
Hole Diameter: **7.88 inches** Hole Condition: **Good**  
Test Type: **Conventional Bottom Hole**  
Tester: **Jake Fahrenbruch**  
Unit No: **43**  
Reference Elevations: **2604.00 ft (KB)**  
**2599.00 ft (CF)**  
KB to GR/CF: **5.00 ft**

**Serial #: 8352**      **Inside**  
Press@RunDepth: **73.11 psig @ 3387.00 ft (KB)**      Capacity: **7000.00 psig**  
Start Date: **2008.03.17**      End Date: **2008.03.17**      Last Calib.: **2008.03.17**  
Start Time: **00:10:00**      End Time: **08:32:00**      Time On Btm: **2008.03.17 @ 02:10:40**  
Time Off Btm: **2008.03.17 @ 06:31:50**

**TEST COMMENT:** IF: Weak blow, built to 5" in bucket.  
IS: Bled off, no blow back.  
FF: Fairly weak blow, built to 11" in bucket.  
FSI: Bled off, no blow back.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1641.21	88.69	Initial Hydro-static
1	19.50	88.28	Open To Flow (1)
31	51.04	89.54	Shut-In(1)
76	918.06	90.15	End Shut-In(1)
76	54.75	89.96	Open To Flow (2)
137	73.11	90.60	Shut-In(2)
260	979.47	91.16	End Shut-In(2)
262	1633.44	91.27	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
145.00	Oil Mud 45%o 55%rn	0.90

## Gas Rates

Choke (Inches)	Pressure (psig)	Gas Rate (Mcf/d)

## SUMMARY

The Van Fleet No. 1 well was based on 2-D CDP seismic data which was shot over the SE/4 and SE-SW/4 of Section 4 and the NE/4 of Section 9 in T1S-R27W, which indicated Stone Corral Anhydrite to Upper Pennsylvanian Isochron thinning at the SE-SW-SE of Section 4-T1S-R27W location. The 2-D seismic coupled with subsurface geology/well control which showed a west/northwest-east/southeast trending structurally high feature at the Top/Lansing datum extending eastward from the abandoned wells in the Van Fleet Field (SW/4 Section 4 and NW/4 Section 9-T1R27W).

The Van Fleet Prospect is located 10 miles east and 11 miles north of Oberlin, Kansas in northeastern Decatur County, Kansas, just south and adjacent to the Nebraska state line. This area of Decatur County is known for prolific per well cumulative oil reserves, predominately from multiple pay zones within the Lansing-Kansas City Group and the Reagan Sandstone. Oil production is predominately associated with structurally high features/closures, however, stratigraphic traps do occur. It is located 1.5 miles west of the 1.44 million BO Warner Field (Lansing/Kansas City and Reagan Sandstone) discovered in 1956.

Compared to the surrounding well control/Reference Well's, the Van Fleet No. 1 runs structurally low at the Top/Lansing. Although the Lansing/Kansas City Group runs structurally low to the surrounding well control, numerous free oil samples shows in the Lansing/Kansas City Zone's which were drill stem tested recovered oily mud with no water or tested tight with no permeability development.

The primary objectives in the Van Fleet No. 1 included the Lansing/Kansas City "A", "B", "H", "I", "J" and "K" Zone's. Secondary objectives included the Kansas City "L" Zone, the Reagan Sandstone and the Granite Wash Formation. The 2-well abandoned Van Fleet Field (located in the SW/4 Section 4 and NW/4 Section 9-T1R27W) produced 28,823 BO from the Lansing/Kansas City "A", "B", "H" and "K" Zone's.

Two open hole drill stem test was run in the Van Fleet No. 1 on the way down during drilling. Drill Stem Test No. 1 covered the Lansing "A" Zone and tested tight recovering 5 feet of mud. Due top the fact that the Lansing/Kansas City Group runs significantly lower structurally than the surrounding well control, the "H", "I", "J" and "K" Zone's were included on Drill Stem Test No. 2 and recovered 60' of gas in pipe and 145 feet of oily mud (45% oil, 55% mud) with very good shut in pressures of 918-979 p.s.i.

The Van Fleet No. 1 was spudded on March 12, 2008 and was production casing was set on March 18, 2008. No drilling problems were encountered during the drilling of this well.

The well was under 24-hour geological supervision from 3,050 feet to 3,680 feet Rotary Total Depth. Wet and dry drilling samples were caught by the drilling crews from 3,100 feet to 3,680 feet at 10-foot intervals with some 5-foot samples caught at the wellsite geologist's request. All lithologic descriptions were lagged to true depth by the consulting wellsite geologist.

## **Hydrocarbon Shows**

Numerous free oil sample shows were observed and recorded in the Lansing/Kansas City Zone's in the Van Fleet No. 1 well:

Lansing "A" Zone:	Very Good Show
Lansing "B" Zone:	Fair-Good Show
Kansas City "H" Zone:	Good Show
Kansas City "I" Zone:	Intermediate-Good Show
Kansas City "J" Zone:	Good Show
Kansas City "K" Zone:	Intermediate Show

The Kansas City "L" Zone was the only Lansing/Kansas City Zone where no sample hydrocarbon shows were observed. No sample show was detected in the Reagan Sandstone or Granite Wash Formation.

Complete lithologic descriptions and hydrocarbon sample shows can be found in the detailed "Zones of Interest" portion of this geologic report.

## **Structural Position**

The Van Fleet No. 1 runs structurally flat to low throughout the well from the Stone Corral Anhydrite through the Granite Wash Formation compared to the Reference Well's.

Compared to the westerly offset well, the John O. Farmer Walters No. 1 abandoned oil well/Reference Well "A", the Van Fleet No. 1 runs significantly lower structurally running -22 feet low at the Stone Corral Anhydrite, -35 feet low at the Heebner Shale, -37 feet low at the Top/Lansing "A", -33 feet low at the Base/Kansas City, and -12 feet low at the Reagan Sandstone.

Compared to the Cities Service Van Fleet No. 1 abandoned oil well/Reference Well "B" located to the west/southwest, the Van Fleet No. 1 runs structurally low throughout the well running -12 feet low at the Stone Corral Anhydrite, -32 feet low at the Heebner Shale, -34 feet low at the Top/Lansing "A", -30 feet low at the Base/Kansas City, and -3 feet low at the Reagan Sandstone.

Compared to the Cities Service Hendricks No. 1 dry hole/Reference Well "C" located to the south, the Van Fleet No. 1 runs flat to structurally low throughout the well running -1 foot low at the Stone Corral Anhydrite, -5 feet low at the Heebner Shale, -3 feet low at the Top/Lansing "A", flat at the Base/Kansas City, and -33 feet low at the Reagan Sandstone.

A structural comparison of the Formation Tops in this well, in relation to the Reference Wells, can be found in the detailed "Formation Tops" table in this geologic report.

### **Conclusion**

The Van Fleet No. 1 wildcat test well location was determined by 2-D CDP seismic indicating significant Stone Corral Anhydrite to Lansing thinning located in the S/2-S/2-SE/4 of Section 4-T1S-R27W with associated Lansing structure as mapped through subsurface geology/well control.

Although the 2-D seismic was not accurate in predicting Stone Corral Anhydrite to Lansing thinning and the primary objective Lansing-Kansas City Formation Zones in the Van Fleet No. 1 run significantly lower structurally when compared to the Reference Well's and surrounding well control, free oil sample shows were observed and recorded in the Lansing "A" and "B" Zone's and the Kansas City "H", "I", "J", and "K" Zone's.

Drill Stem Test No. 1 isolated the Lansing "A" Zone, which produced oil in the abandoned Van Fleet Field, and tested tight with no permeability development. A Drill Stem Test of the Kansas City "H"- "K" Zone's recovered 60' of gas in pipe and 145 feet of oily mud (45% oil, 55% mud), with no water recovery, and has shut in pressures of 918-979 p.s.i.

Therefore, based on the water-free oil and mud fluid recovery on Drill Stem Test No. 2 which tested 60' of gas in pipe and 145 feet of oily mud (45% oil, 55% mud), and analysis and evaluation of Log-Tech logs confirming some microlog and porosity development in several Lansing/Kansas City Zone's, 5 1/2" production casing was set in the Van Fleet No. 1 to test through pipe the commercial oil potential of the primary objective Lansing/Kansas City Group Formation's.

Respectfully Submitted,



Richard J. Hall

AAPG Certified Petroleum Geologist No. 5820

Wellsite Consulting Geologist

Whitehall Exploration

