



KANSAS CORPORATION COMMISSION 1048927  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
June 2009

Form Must Be Typed  
Form must be Signed  
All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 34358  
Name: Orca Operating Company LLC  
Address 1: 427 S. BOSTON, STE 929  
Address 2: \_\_\_\_\_  
City: TULSA State: OK Zip: 74103 + \_\_\_\_\_  
Contact Person: Wade Cagle  
Phone: ( 918 ) 587-3104  
CONTRACTOR: License # 33132  
Name: Dan D Drilling  
Wellsite Geologist: Glenn Timson

Purchaser: \_\_\_\_\_  
Designate Type of Completion:  
 New Well     Re-Entry     Workover  
 Oil     WSW     SWD     SIOW  
 Gas     D&A     ENHR     SIGW  
 OG     GSW     Temp. Abd.  
 CM (Coal Bed Methane)  
 Cathodic     Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:  
Operator: \_\_\_\_\_  
Well Name: \_\_\_\_\_  
Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_  
 Deepening     Re-perf.     Conv. to ENHR     Conv. to SWD  
 Conv. to GSW  
 Plug Back: \_\_\_\_\_ Plug Back Total Depth  
 Commingled    Permit #: \_\_\_\_\_  
 Dual Completion    Permit #: \_\_\_\_\_  
 SWD    Permit #: \_\_\_\_\_  
 ENHR    Permit #: \_\_\_\_\_  
 GSW    Permit #: \_\_\_\_\_  
09/21/2010    10/13/2010    01/03/2011  
Spud Date or    Date Reached TD    Completion Date or  
Recompletion Date       Recompletion Date

API No. 15 - 15-113-21343-01-00  
Spot Description: \_\_\_\_\_  
SW NW NW NW Sec. 36 Twp. 19 S. R. 1  East  West  
375 Feet from  North /  South Line of Section  
250 Feet from  East /  West Line of Section  
Footages Calculated from Nearest Outside Section Corner:  
 NE  NW  SE  SW  
County: McPherson  
Lease Name: Alfred Well #: 1-36H  
Field Name: \_\_\_\_\_  
Producing Formation: Missippian  
Elevation: Ground: 1567 Kelly Bushing: 1577  
Total Depth: 6955 Plug Back Total Depth: \_\_\_\_\_  
Amount of Surface Pipe Set and Cemented at: 397 Feet  
Multiple Stage Cementing Collar Used?  Yes  No  
If yes, show depth set: \_\_\_\_\_ Feet  
If Alternate II completion, cement circulated from: \_\_\_\_\_  
feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan  
(Data must be collected from the Reserve Pit)  
Chloride content: 5700 ppm Fluid volume: 6500 bbls  
Dewatering method used: Evaporated  
Location of fluid disposal if hauled offsite:  
Operator Name: \_\_\_\_\_  
Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_  
Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West  
County: \_\_\_\_\_ Permit #: \_\_\_\_\_

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Letter of Confidentiality Received  
Date: \_\_\_\_\_  
 Confidential Release Date: \_\_\_\_\_  
 Wireline Log Received  
 Geologist Report Received  
 UIC Distribution  
ALT  I  II  III Approved by: Deanna Garrison Date: 04/11/2011



1048927

Operator Name: Orca Operating Company LLC Lease Name: Alfred Well #: 1-36H  
 Sec. 36 Twp. 19 S. R. 1  East  West County: McPherson

**INSTRUCTIONS:** Show important tops and base of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Electric Log Run <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Submitted Electronically <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(If no, Submit Copy)</i>  List All E. Logs Run:  MWD Gamma Ray Log	<input checked="" type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  <table style="width:100%; border: none;"> <tr> <td style="width:60%;">Name</td> <td style="width:20%;">Top</td> <td style="width:20%;">Datum</td> </tr> <tr> <td>Missippian</td> <td>2894</td> <td></td> </tr> </table>	Name	Top	Datum	Missippian	2894	
Name	Top	Datum					
Missippian	2894						

CASING RECORD <input checked="" type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Conductor	22	16	62.58	40	Grouted	5	
Surface	12.25	9.625	36	397	Class A	200	2% Gel 1/2# Poly
Production	8.75	7	26	3527	Class A	175	8# Kol-Seal per sack, 13.4 #/Gal

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone	-			
	-			

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD: Size: <u>3.5"</u> Set At: <u>6085</u> Packer At: _____		Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of First, Resumed Production, SWD or ENHR. <u>01/03/2011</u>		Producing Method: <input type="checkbox"/> Flowing <input checked="" type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain) _____	
Estimated Production Per 24 Hours	Oil Bbls. <u>22</u>	Gas Mcf <u>0</u>	Water Bbls. <u>6000</u>
		Gas-Oil Ratio	Gravity <u>36</u>

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input checked="" type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i> <input checked="" type="checkbox"/> Other (Specify) <u>Horizontal Completion</u>	PRODUCTION INTERVAL: _____ _____
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**Scientific Drilling**

## **Orca Operating Company**

**McPherson County Kansas**

**Section 36-19S-1W**

**Alfred 1-36H**

**Sump Hole**

**Survey: Survey #1 MWD**

## **Survey Completion Report**

**13 October, 2010**



**Scientific Drilling**

**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Sump Hole  
**Design:** Sump Hole

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

<b>Project</b>	McPherson County Kansas, McPherson County, South Central Kansas		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Kansas Southern Zone		

<b>Site</b>	Section 36-19S-1W				
<b>Site Position:</b>		<b>Northing:</b>	1,931,663.88 usft	<b>Latitude:</b>	38° 21' 44.339 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,630,558.55 usft	<b>Longitude:</b>	97° 23' 24.477 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	0"	<b>Grid Convergence:</b>	0.68 °

<b>Well</b>	Alfred 1-36H, Mississippi					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,931,663.88 usft	<b>Latitude:</b>	38° 21' 44.339 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,630,558.55 usft	<b>Longitude:</b>	97° 23' 24.477 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	1,582.0 usft	<b>Ground Level:</b>	1,566.0 usft

<b>Wellbore</b>	Sump Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	04/07/10	4.45	66.47	52,823

<b>Design</b>	Sump Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	155.00	

<b>Survey Program</b>	Date 10/02/10				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
496.0	3,530.0	Survey #1 MWD (Sump Hole)	MWD	MWD - Standard	

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
496.0	1.36	114.80	496.0	-2.5	5.3	4.5	0.27
752.0	1.00	112.61	751.9	-4.6	10.2	8.5	0.14
1,007.0	0.47	113.99	1,006.9	-5.9	13.2	10.9	0.21
1,263.0	0.57	123.91	1,262.9	-7.0	15.2	12.8	0.05
1,519.0	0.17	137.87	1,518.9	-8.0	16.5	14.2	0.16
1,769.0	0.24	333.51	1,768.9	-7.8	16.5	14.1	0.16
1,871.0	0.18	183.48	1,870.9	-7.8	16.4	14.0	0.40
1,901.0	0.38	143.93	1,900.9	-7.9	16.5	14.1	0.89
1,930.0	0.50	171.82	1,929.9	-8.1	16.5	14.3	0.83
1,959.0	1.20	154.35	1,958.9	-8.5	16.7	14.8	2.55
1,989.0	3.04	167.03	1,988.8	-9.6	17.0	15.9	6.29



# Scientific Drilling

## Survey Completion Report



**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Sump Hole  
**Design:** Sump Hole

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,019.0	5.15	167.68	2,018.8	-11.7	17.5	18.0	7.03
2,049.0	7.40	165.65	2,048.6	-14.9	18.2	21.2	7.54
2,079.0	10.30	161.79	2,078.2	-19.3	19.6	25.7	9.86
2,108.0	12.57	160.50	2,106.6	-24.7	21.4	31.4	7.88
2,139.0	14.64	162.54	2,136.8	-31.6	23.7	38.7	6.85
2,170.0	16.31	163.77	2,166.6	-39.5	26.1	46.9	5.49
2,197.0	17.18	162.62	2,192.5	-47.0	28.4	54.6	3.45
2,228.0	18.77	163.68	2,222.0	-56.1	31.1	64.0	5.24
2,258.0	19.99	164.98	2,250.3	-65.7	33.8	73.9	4.31
2,289.0	21.94	160.65	2,279.2	-76.3	37.1	84.9	8.03
2,320.0	24.23	160.54	2,307.7	-87.8	41.1	96.9	7.39
2,351.0	25.72	160.13	2,335.8	-100.1	45.6	110.0	4.84
2,381.0	27.83	159.04	2,362.6	-112.8	50.3	123.4	7.22
2,410.0	30.36	157.86	2,388.0	-125.9	55.5	137.5	8.95
2,441.0	32.91	158.56	2,414.4	-141.0	61.5	153.8	8.31
2,471.0	34.84	157.39	2,439.3	-156.5	67.8	170.5	6.79
2,503.0	36.76	156.30	2,465.2	-173.7	75.1	189.2	6.32
2,533.0	37.84	155.73	2,489.1	-190.3	82.5	207.3	3.78
2,564.0	39.77	156.12	2,513.2	-208.0	90.4	226.8	6.28
2,595.0	41.93	155.30	2,536.7	-226.5	98.8	247.0	7.18
2,624.0	42.61	155.44	2,558.1	-244.2	106.9	266.5	2.37
2,655.0	45.01	155.51	2,580.5	-263.8	115.8	288.0	7.74
2,686.0	47.28	155.47	2,602.0	-284.1	125.1	310.4	7.32
2,715.0	48.65	155.27	2,621.4	-303.7	134.1	331.9	4.75
2,746.0	50.41	155.85	2,641.5	-325.2	143.8	355.5	5.85
2,773.0	52.57	155.39	2,658.3	-344.4	152.5	376.6	8.11
2,802.0	54.76	153.40	2,675.5	-365.5	162.6	400.0	9.36
2,833.0	57.07	152.85	2,692.9	-388.4	174.3	425.6	7.60
2,863.0	58.32	152.53	2,708.9	-410.9	185.9	450.9	4.26
2,895.0	58.07	152.34	2,725.8	-435.0	198.5	478.1	0.93
2,926.0	58.61	152.37	2,742.1	-458.4	210.7	504.5	1.74
2,958.0	60.14	153.19	2,758.4	-482.9	223.3	532.0	5.27
2,988.0	60.54	154.27	2,773.2	-506.2	234.8	558.0	3.40
3,019.0	60.42	154.34	2,788.5	-530.5	246.5	585.0	0.43
3,050.0	60.20	154.04	2,803.8	-554.8	258.3	611.9	1.10
3,082.0	60.04	153.84	2,819.8	-579.7	270.5	639.7	0.74
3,112.0	59.97	153.59	2,834.8	-603.0	282.0	665.7	0.76
3,143.0	59.68	154.48	2,850.4	-627.1	293.7	692.5	2.65
3,174.0	59.93	154.56	2,866.0	-651.3	305.2	719.3	0.84
3,203.0	60.03	155.87	2,880.5	-674.1	315.7	744.4	3.93
3,233.0	60.49	156.02	2,895.3	-697.9	326.4	770.4	1.59
3,264.0	60.23	156.95	2,910.7	-722.6	337.1	797.3	2.74
3,293.0	59.35	156.68	2,925.3	-745.6	347.0	822.4	3.14
3,323.0	59.27	156.55	2,940.6	-769.3	357.2	848.2	0.46



**Scientific Drilling**  
Survey Completion Report



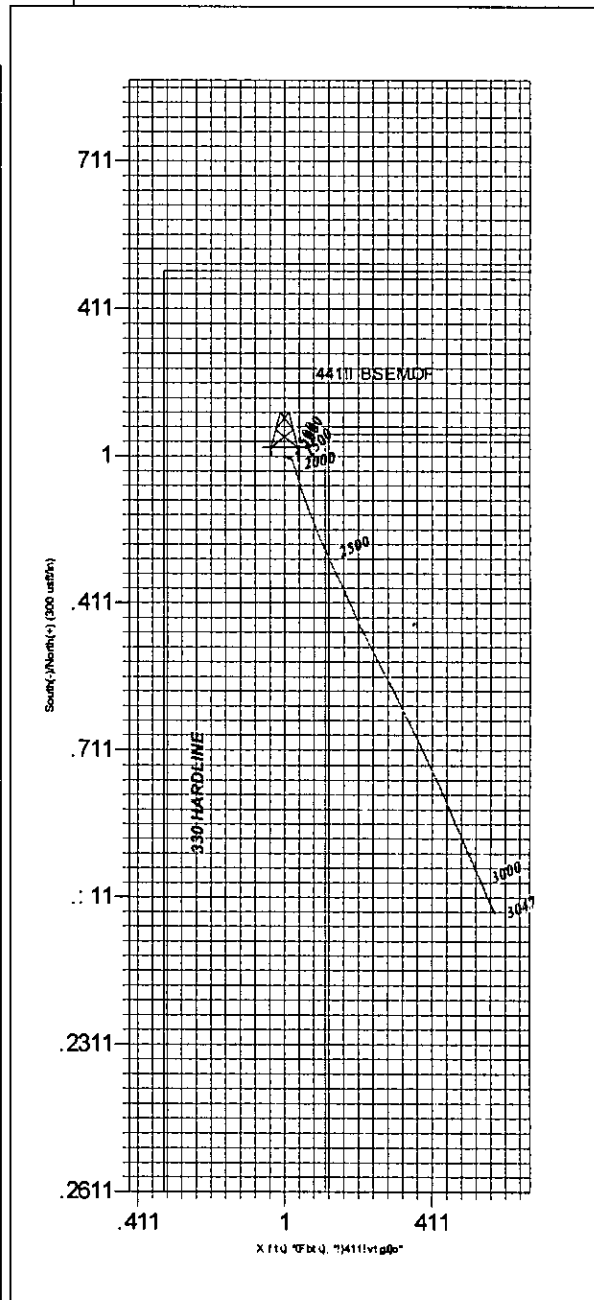
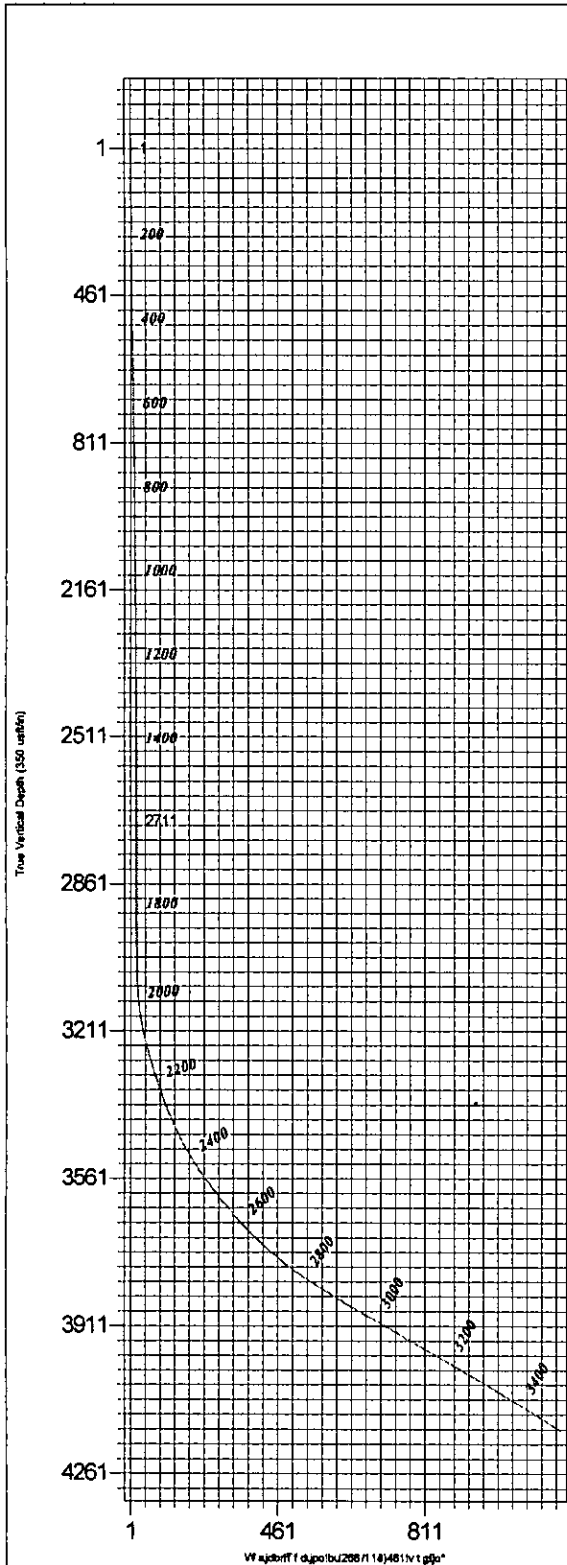
**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Sump Hole  
**Design:** Sump Hole

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
3,354.0	59.26	156.48	2,956.4	-793.7	367.8	874.8	0.20
3,386.0	59.00	156.34	2,972.8	-818.9	378.8	902.3	0.90
3,418.0	59.02	156.34	2,989.3	-844.0	389.8	929.7	0.06
3,450.0	58.91	156.07	3,005.8	-869.1	400.9	957.1	0.80
3,482.0	59.20	156.20	3,022.3	-894.2	412.0	984.6	0.97
3,530.0	59.20	156.20	3,046.8	-931.9	428.6	1,025.8	0.00

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



V!s!j!d!b!r!t! d!j!p!l B!j!n v!u  
 266/11

Tvn d!z! Tvn d!z!N X E D Bgr! e2 471 O!v!n q!l p!r!  
 O!l! b!l! C!z! M! q!l N!P! q!p! E!l! : : 81-P!p!d! 243121

X!M!P!E!L!A!F! R!p!r!t! d!r!										
C!T!	M!d!	Q!m!p!	Q!m!p!	M!p!m!	M!p!m!	M!p!m!	M!p!m!	M!p!m!	M!p!m!	N!m!
87	10	2	2	2	2	2	2	2	2	2

Tvn q!l p!r!  
 C!p!m! l! p!r! C!p!n! T!v!g!d!  
 4157/9 (U!V!E!l! : 42! : (T!l! 1539/7 (I!  
 4641/1 (N!E!l!2136/9 (V!T!A! 1266/11B!l!



# **Orca Operating Company**

**McPherson County Kansas**

**Section 36-19S-1W**

**Alfred 1-36H**

**Lateral #1**

**Design: Lateral #1**

# **Survey Completion Report**

**18 October, 2010**







# Scientific Drilling

## Survey Completion Report



**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Lateral #1  
**Design:** Lateral #1

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

<b>Project</b>	McPherson County Kansas, McPherson County, South Central Kansas		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Kansas Southern Zone		

<b>Site</b>	Section 36-19S-1W				
<b>Site Position:</b>		<b>Northing:</b>	1,931,663.88 usft	<b>Latitude:</b>	38° 21' 44.339 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,630,558.55 usft	<b>Longitude:</b>	97° 23' 24.477 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	0"	<b>Grid Convergence:</b>	0.68 °

<b>Well</b>	Alfred 1-36H, Mississippi					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,931,663.88 usft	<b>Latitude:</b>	38° 21' 44.339 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,630,558.55 usft	<b>Longitude:</b>	97° 23' 24.477 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	1,582.0 usft	<b>Ground Level:</b>	1,566.0 usft

<b>Wellbore</b>	Lateral #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	04/07/10	4.45	66.47	52,823

<b>Design</b>	Lateral #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	3,233.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	155.00	

<b>Survey Program</b>	Date 10/13/10				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
496.0	3,233.0	Survey #1 MWD (Sump Hole)	MWD	MWD - Standard	
3,260.0	6,955.0	Survey #1 Lat #1 MWD (Lateral #1)	MWD	MWD - Standard	

<b>MD (usft)</b>	<b>Inc (°)</b>	<b>Azi (azimuth) (°)</b>	<b>TVD (usft)</b>	<b>N/S (usft)</b>	<b>E/W (usft)</b>	<b>V. Sec (usft)</b>	<b>DLeg (°/100usft)</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
496.0	1.36	114.80	496.0	-2.5	5.3	4.5	0.27
752.0	1.00	112.61	751.9	-4.6	10.2	8.5	0.14
1,007.0	0.47	113.99	1,006.9	-5.9	13.2	10.9	0.21
1,263.0	0.57	123.91	1,262.9	-7.0	15.2	12.8	0.05
1,519.0	0.17	137.87	1,518.9	-8.0	16.5	14.2	0.16
1,769.0	0.24	333.51	1,768.9	-7.8	16.5	14.1	0.16
1,871.0	0.18	183.48	1,870.9	-7.8	16.4	14.0	0.40
1,901.0	0.38	143.93	1,900.9	-7.9	16.5	14.1	0.89
1,930.0	0.50	171.82	1,929.9	-8.1	16.5	14.3	0.83
1,959.0	1.20	154.35	1,958.9	-8.5	16.7	14.8	2.55

**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Lateral #1  
**Design:** Lateral #1

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,989.0	3.04	167.03	1,988.8	-9.6	17.0	15.9	6.29
2,019.0	5.15	167.68	2,018.8	-11.7	17.5	18.0	7.03
2,049.0	7.40	165.65	2,048.6	-14.9	18.2	21.2	7.54
2,079.0	10.30	161.79	2,078.2	-19.3	19.6	25.7	9.86
2,108.0	12.57	160.50	2,106.6	-24.7	21.4	31.4	7.88
2,139.0	14.64	162.54	2,136.8	-31.6	23.7	38.7	6.85
2,170.0	16.31	163.77	2,166.6	-39.5	26.1	46.9	5.49
2,197.0	17.18	162.62	2,192.5	-47.0	28.4	54.6	3.45
2,228.0	18.77	163.68	2,222.0	-56.1	31.1	64.0	5.24
2,258.0	19.99	164.98	2,250.3	-65.7	33.8	73.9	4.31
2,289.0	21.94	160.65	2,279.2	-76.3	37.1	84.9	8.03
2,320.0	24.23	160.54	2,307.7	-87.8	41.1	96.9	7.39
2,351.0	25.72	160.13	2,335.8	-100.1	45.6	110.0	4.84
2,381.0	27.83	159.04	2,362.6	-112.8	50.3	123.4	7.22
2,410.0	30.36	157.86	2,388.0	-125.9	55.5	137.5	8.95
2,441.0	32.91	158.56	2,414.4	-141.0	61.5	153.8	8.31
2,471.0	34.84	157.39	2,439.3	-156.5	67.8	170.5	6.79
2,503.0	36.76	156.30	2,465.2	-173.7	75.1	189.2	6.32
2,533.0	37.84	155.73	2,489.1	-190.3	82.5	207.3	3.78
2,564.0	39.77	156.12	2,513.2	-208.0	90.4	226.8	6.28
2,595.0	41.93	155.30	2,536.7	-226.5	98.8	247.0	7.18
2,624.0	42.61	155.44	2,558.1	-244.2	106.9	266.5	2.37
2,655.0	45.01	155.51	2,580.5	-263.8	115.8	288.0	7.74
2,686.0	47.28	155.47	2,602.0	-284.1	125.1	310.4	7.32
2,715.0	48.65	155.27	2,621.4	-303.7	134.1	331.9	4.75
2,746.0	50.41	155.85	2,641.5	-325.2	143.8	355.5	5.85
2,773.0	52.57	155.39	2,658.3	-344.4	152.5	376.6	8.11
2,802.0	54.76	153.40	2,675.5	-365.5	162.6	400.0	9.36
2,833.0	57.07	152.85	2,692.9	-388.4	174.3	425.6	7.60
2,863.0	58.32	152.53	2,708.9	-410.9	185.9	450.9	4.26
2,895.0	58.07	152.34	2,725.8	-435.0	198.5	478.1	0.93
2,926.0	58.61	152.37	2,742.1	-458.4	210.7	504.5	1.74
2,958.0	60.14	153.19	2,758.4	-482.9	223.3	532.0	5.27
2,988.0	60.54	154.27	2,773.2	-506.2	234.8	558.0	3.40
3,019.0	60.42	154.34	2,788.5	-530.5	246.5	585.0	0.43
3,050.0	60.20	154.04	2,803.8	-554.8	258.3	611.9	1.10
3,082.0	60.04	153.84	2,819.8	-579.7	270.5	639.7	0.74
3,112.0	59.97	153.59	2,834.8	-603.0	282.0	665.7	0.76
3,143.0	59.68	154.48	2,850.4	-627.1	293.7	692.5	2.65
3,174.0	59.93	154.56	2,866.0	-651.3	305.2	719.3	0.84
3,203.0	60.03	155.87	2,880.5	-674.1	315.7	744.4	3.93
3,233.0	60.49	156.02	2,895.3	-697.9	326.4	770.4	1.59
3,260.0	68.00	156.41	2,907.1	-720.1	336.2	794.7	27.85
3,289.0	74.96	158.59	2,916.3	-745.5	346.7	822.1	25.03

**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Lateral #1  
**Design:** Lateral #1

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (*100usft)
3,321.0	82.13	158.64	2,922.6	-774.7	358.1	853.4	22.41
3,353.0	84.33	160.40	2,926.4	-804.4	369.2	885.1	8.78
3,385.0	86.26	159.87	2,929.0	-834.4	380.0	916.9	6.25
3,417.0	87.30	160.93	2,930.8	-864.5	390.8	948.7	4.64
3,449.0	88.11	161.37	2,932.1	-894.8	401.1	980.5	2.88
3,481.0	89.69	160.84	2,932.7	-925.1	411.5	1,012.3	5.21
3,513.0	90.84	161.89	2,932.6	-955.4	421.7	1,044.1	4.87
3,545.0	91.19	161.72	2,932.0	-985.8	431.7	1,075.8	1.22
3,577.0	90.75	160.66	2,931.5	-1,016.1	442.0	1,107.7	3.59
3,609.0	89.87	159.52	2,931.3	-1,046.1	452.9	1,139.5	4.50
3,641.0	88.90	159.78	2,931.6	-1,076.1	464.0	1,171.4	3.14
3,673.0	88.81	159.35	2,932.3	-1,106.1	475.2	1,203.3	1.37
3,704.0	89.16	159.78	2,932.8	-1,135.2	486.0	1,234.2	1.79
3,736.0	89.16	159.08	2,933.3	-1,165.1	497.2	1,266.1	2.19
3,768.0	88.81	158.82	2,933.8	-1,195.0	508.7	1,298.0	1.36
3,800.0	89.08	157.94	2,934.4	-1,224.7	520.5	1,330.0	2.88
3,832.0	89.87	158.11	2,934.7	-1,254.4	532.5	1,361.9	2.53
3,864.0	90.31	157.15	2,934.7	-1,284.0	544.7	1,393.9	3.30
3,896.0	90.22	156.80	2,934.5	-1,313.4	557.2	1,425.9	1.13
3,928.0	89.96	156.01	2,934.5	-1,342.8	570.0	1,457.9	2.60
3,960.0	90.13	156.27	2,934.5	-1,372.0	582.9	1,489.8	0.97
3,992.0	90.04	155.34	2,934.4	-1,401.2	596.1	1,521.8	2.92
4,024.0	90.40	155.57	2,934.3	-1,430.3	609.4	1,553.8	1.33
4,056.0	90.57	155.39	2,934.0	-1,459.4	622.6	1,585.8	0.77
4,088.0	90.92	156.01	2,933.6	-1,488.6	635.8	1,617.8	2.22
4,120.0	90.84	155.39	2,933.1	-1,517.8	649.0	1,649.8	1.95
4,152.0	90.75	155.30	2,932.7	-1,546.8	662.3	1,681.8	0.40
4,184.0	89.25	154.25	2,932.7	-1,575.8	676.0	1,713.8	5.72
4,215.0	89.60	154.95	2,933.0	-1,603.8	689.2	1,744.8	2.52
4,247.0	89.52	155.21	2,933.2	-1,632.8	702.7	1,776.8	0.85
4,279.0	89.08	155.21	2,933.6	-1,661.9	716.1	1,808.8	1.38
4,311.0	88.46	156.18	2,934.3	-1,691.0	729.3	1,840.8	3.60
4,343.0	90.40	156.88	2,934.6	-1,720.4	742.1	1,872.8	6.45
4,375.0	90.84	158.03	2,934.3	-1,749.9	754.3	1,904.8	3.85
4,407.0	90.48	157.50	2,933.9	-1,779.5	766.4	1,936.7	2.00
4,439.0	90.75	158.03	2,933.6	-1,809.2	778.5	1,968.7	1.86
4,471.0	89.78	159.43	2,933.4	-1,839.0	790.2	2,000.6	5.32
4,503.0	89.34	158.47	2,933.7	-1,868.8	801.6	2,032.5	3.30
4,535.0	89.60	158.90	2,934.0	-1,898.7	813.3	2,064.5	1.57
4,567.0	89.08	158.10	2,934.3	-1,928.4	825.0	2,096.4	2.98
4,599.0	89.34	158.20	2,934.8	-1,958.1	836.9	2,128.4	0.87
4,630.0	89.16	158.10	2,935.2	-1,986.9	848.4	2,159.3	0.66
4,662.0	89.52	158.64	2,935.5	-2,016.6	860.2	2,191.2	2.03
4,694.0	89.87	157.94	2,935.7	-2,046.4	872.1	2,223.2	2.45
4,726.0	90.40	158.03	2,935.6	-2,076.0	884.1	2,255.1	1.68

**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Lateral #1  
**Design:** Lateral #1

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (*100usft)
4,758.0	91.01	158.73	2,935.2	-2,105.8	895.9	2,287.1	2.90
4,790.0	90.57	159.43	2,934.8	-2,135.7	907.3	2,319.0	2.58
4,822.0	90.40	159.61	2,934.5	-2,165.6	918.5	2,350.9	0.77
4,854.0	89.87	159.61	2,934.5	-2,195.6	929.6	2,382.8	1.66
4,886.0	89.78	158.38	2,934.5	-2,225.5	941.1	2,414.7	3.85
4,918.0	90.22	159.17	2,934.5	-2,255.3	952.7	2,446.7	2.83
4,950.0	90.13	158.55	2,934.5	-2,285.2	964.2	2,478.6	1.96
4,982.0	89.43	158.91	2,934.6	-2,315.0	975.8	2,510.5	2.46
5,014.0	89.60	158.99	2,934.8	-2,344.9	987.3	2,542.4	0.59
5,046.0	90.04	158.82	2,934.9	-2,374.7	998.8	2,574.4	1.47
5,078.0	90.31	158.55	2,934.8	-2,404.5	1,010.5	2,606.3	1.18
5,110.0	90.57	158.99	2,934.6	-2,434.4	1,022.1	2,638.2	1.60
5,142.0	90.66	158.73	2,934.3	-2,464.2	1,033.6	2,670.1	0.86
5,174.0	90.92	158.47	2,933.8	-2,494.0	1,045.3	2,702.1	1.15
5,206.0	91.10	158.38	2,933.3	-2,523.7	1,057.0	2,734.0	0.63
5,237.0	90.66	158.47	2,932.8	-2,552.6	1,068.4	2,765.0	1.45
5,269.0	91.10	159.08	2,932.3	-2,582.4	1,080.0	2,796.9	2.35
5,301.0	91.10	158.55	2,931.7	-2,612.2	1,091.6	2,828.8	1.66
5,333.0	90.48	158.64	2,931.2	-2,642.0	1,103.3	2,860.7	1.96
5,365.0	90.13	158.73	2,931.1	-2,671.8	1,114.9	2,892.7	1.13
5,397.0	89.69	158.91	2,931.1	-2,701.7	1,126.5	2,924.6	1.49
5,429.0	89.52	158.69	2,931.3	-2,731.5	1,138.0	2,956.5	0.87
5,461.0	88.11	157.94	2,932.0	-2,761.2	1,149.9	2,988.5	4.99
5,493.0	88.29	157.06	2,933.0	-2,790.8	1,162.1	3,020.4	2.81
5,525.0	88.81	157.94	2,933.8	-2,820.3	1,174.3	3,052.4	3.19
5,557.0	89.08	157.94	2,934.4	-2,850.0	1,186.4	3,084.3	0.84
5,589.0	89.43	157.94	2,934.8	-2,879.6	1,198.4	3,116.3	1.09
5,621.0	89.96	157.60	2,935.0	-2,909.3	1,210.5	3,148.3	1.97
5,653.0	90.22	157.68	2,934.9	-2,938.9	1,222.6	3,180.2	0.85
5,684.0	90.48	157.40	2,934.7	-2,967.5	1,234.5	3,211.2	1.23
5,716.0	90.31	157.15	2,934.5	-2,997.0	1,246.9	3,243.2	0.94
5,748.0	89.25	157.41	2,934.6	-3,026.5	1,259.2	3,275.1	3.41
5,780.0	89.69	157.94	2,934.9	-3,056.1	1,271.4	3,307.1	2.15
5,812.0	90.22	157.76	2,935.0	-3,085.8	1,283.4	3,339.1	1.75
5,844.0	90.84	157.94	2,934.7	-3,115.4	1,295.5	3,371.0	2.02
5,876.0	89.16	157.94	2,934.7	-3,145.1	1,307.5	3,403.0	5.25
5,908.0	88.11	157.41	2,935.4	-3,174.7	1,319.7	3,434.9	3.68
5,940.0	88.11	157.85	2,936.5	-3,204.2	1,331.8	3,466.9	1.37
5,972.0	88.64	157.24	2,937.4	-3,233.8	1,344.1	3,498.8	2.52
6,004.0	89.08	157.15	2,938.0	-3,263.3	1,356.5	3,530.8	1.40
6,036.0	88.99	157.15	2,938.6	-3,292.8	1,368.9	3,562.8	0.28
6,068.0	88.72	156.97	2,939.2	-3,322.2	1,381.4	3,594.8	1.01
6,100.0	89.34	157.85	2,939.8	-3,351.8	1,393.6	3,626.7	3.36
6,132.0	89.60	158.11	2,940.0	-3,381.4	1,405.6	3,658.7	1.15

**Company:** Orca Operating Company  
**Project:** McPherson County Kansas  
**Site:** Section 36-19S-1W  
**Well:** Alfred 1-36H  
**Wellbore:** Lateral #1  
**Design:** Lateral #1

**Local Co-ordinate Reference:** Well Alfred 1-36H  
**TVD Reference:** 1-36H @ 1582.0usft  
**MD Reference:** 1-36H @ 1582.0usft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDMOKC

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)
6,164.0	88.99	156.98	2,940.4	-3,411.0	1,417.9	3,690.6	4.01
6,200.0	89.34	156.27	2,941.0	-3,444.1	1,432.1	3,726.6	2.20
6,232.0	90.22	155.92	2,941.1	-3,473.3	1,445.1	3,758.6	2.96
6,264.0	90.48	155.21	2,940.9	-3,502.4	1,458.3	3,790.6	2.36
6,296.0	90.22	156.36	2,940.7	-3,531.6	1,471.5	3,822.6	3.68
6,327.0	90.04	155.57	2,940.6	-3,559.9	1,484.1	3,853.6	2.61
6,359.0	89.78	155.65	2,940.7	-3,589.1	1,497.3	3,885.6	0.85
6,391.0	89.87	155.48	2,940.8	-3,618.2	1,510.5	3,917.6	0.60
6,423.0	90.31	155.30	2,940.7	-3,647.3	1,523.9	3,949.6	1.49
6,455.0	90.66	155.13	2,940.5	-3,676.4	1,537.3	3,981.6	1.22
6,487.0	91.28	155.39	2,939.9	-3,705.4	1,550.7	4,013.6	2.10
6,519.0	91.10	155.65	2,939.3	-3,734.5	1,563.9	4,045.6	0.99
6,551.0	91.28	155.48	2,938.6	-3,763.7	1,577.2	4,077.6	0.77
6,583.0	91.80	155.30	2,937.7	-3,792.7	1,590.5	4,109.6	1.72
6,615.0	91.98	155.21	2,936.7	-3,821.8	1,603.9	4,141.5	0.63
6,647.0	92.15	155.13	2,935.5	-3,850.8	1,617.3	4,173.5	0.59
6,678.0	92.07	154.86	2,934.4	-3,878.9	1,630.4	4,204.5	0.91
6,710.0	92.51	155.04	2,933.1	-3,907.9	1,643.9	4,236.5	1.49
6,742.0	92.77	154.69	2,931.6	-3,936.8	1,657.5	4,268.4	1.36
6,774.0	93.21	155.48	2,930.0	-3,965.8	1,671.0	4,300.4	2.82
6,806.0	93.47	155.65	2,928.1	-3,994.9	1,684.2	4,332.3	0.97
6,838.0	93.74	155.13	2,926.1	-4,023.9	1,697.5	4,364.3	1.83
6,870.0	93.74	155.74	2,924.0	-4,052.9	1,710.8	4,396.2	1.90
6,902.0	94.00	155.21	2,921.8	-4,082.0	1,724.0	4,428.1	1.84
6,913.0	94.09	155.83	2,921.1	-4,092.0	1,728.6	4,439.1	5.68
6,955.0	94.43	158.20	2,917.9	-4,130.5	1,744.9	4,481.0	5.69

TGT Lateral 1 Alfred 1-36H

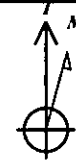
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Scientific Drilling

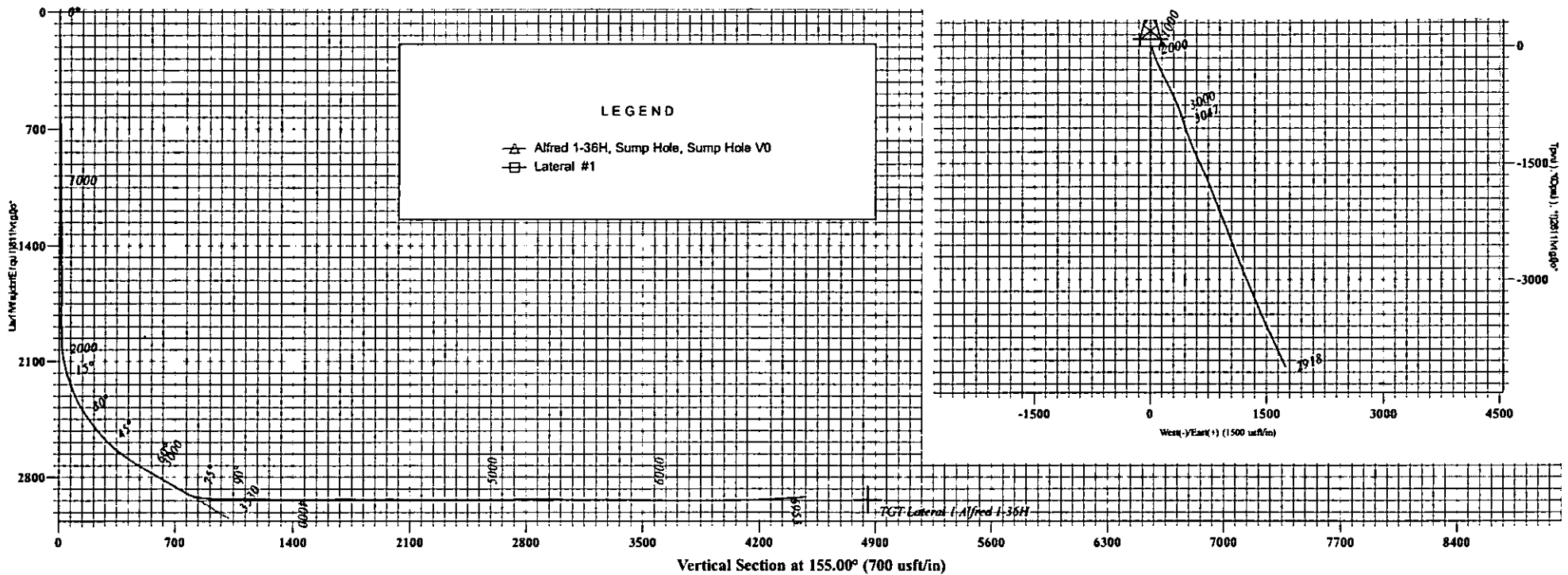
# Orca Operating Company

Field: McPherson County Kansas  
Site: Section 36-19S-1W  
Well: Alfred 1-36H  
Wellpath: Lateral #1  
Plan: Lateral #1



Azimuths to True North  
Magnetic North: 4.45°

Magnetic Field  
Strength: 52822.6uT  
Dip Angle: 66.47°  
Date: 04/07/2010  
Model: IGRF2010



Vertical Section Azimuth  
155.00°

Sump Hole  
Bottom Hole from Surface:  
3046.8' TVD 931.9' S & 428.6' E  
3530.0' MD 1025.8' VS @ 155.0 Azimuth

Lateral #1  
Bottom Hole From Surface:  
2917.9' TVD 4130.5' S & 1744.9' E  
6955.0' MD 4481.0' VS @ 155.0 Az.



Scientific Drilling

Design: Lateral #1 (Alfred 1-36H/Lateral #1)

Created By: Genie Lightfoot Date: 15:07, October 18 2010

WGS 84	NAD 83	Northings	Eastings	Longitude	Site
1911663.82	1630558.35	38°21'44.338"N	97°21'34.477"W		