

# Shell Exploration & Production Co. Inc.

Barber Co. KS (NAD-27)

Sec 34-T34S-R10W

Knorp Farms 3410 #34-1H

900033433

Wellbore #1

Design: Final Survey

## Sperry Drilling Services

# Combo Report With Grid North & True North

26 February, 2013

Surface UWI : 900033433

TD Date : 11th Jan, 2013

Well Coordinates: 139,440.25 N, 2,032,915.37 E (37° 02' 58.42" N, 098° 23' 14.01" W)

Ground Level: 1,332.00 ft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well Knorp Farms 3410 #34-1H

WELL @ 1359.50ft (Nabors F-01 (27.5'))

N

Grid

API US New

Version: 2003.21 Build: 46

**HALLIBURTON**

## Design Report for Knorp Farms 3410 #34-1H - Final Survey

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
0.00	0.00	0.00	0.06	-1,359.50	0.00	0.00 N	0.00 E	139,440.25	2,032,915.37	0.00	0.00	
142.00	0.90	108.33	108.39	-1,217.51	141.99	0.35 S	1.06 E	139,439.90	2,032,916.43	0.63	0.49	Start MWD @ 142.00 MD
239.00	1.98	126.68	126.74	-1,120.54	238.96	1.59 S	3.13 E	139,438.66	2,032,918.50	1.20	2.01	
331.00	3.28	128.88	128.94	-1,028.64	330.86	4.19 S	6.45 E	139,436.06	2,032,921.82	1.42	5.04	
424.00	4.97	125.38	125.44	-935.88	423.62	8.20 S	11.81 E	139,432.05	2,032,927.18	1.84	9.74	
483.00	5.67	126.06	126.12	-877.13	482.37	11.39 S	16.25 E	139,428.86	2,032,931.62	1.19	13.51	
630.00	5.77	109.82	109.88	-730.86	628.64	18.17 S	29.07 E	139,422.08	2,032,944.44	1.10	21.99	
725.00	6.03	87.49	87.55	-636.35	723.15	19.57 S	38.55 E	139,420.68	2,032,953.92	2.42	24.68	
821.00	6.47	87.79	87.85	-540.92	818.58	19.14 S	48.99 E	139,421.11	2,032,964.36	0.46	25.69	
916.00	6.46	86.55	86.61	-446.52	912.98	18.61 S	59.67 E	139,421.64	2,032,975.04	0.15	26.63	
1,011.00	6.17	86.56	86.62	-352.10	1,007.40	17.99 S	70.10 E	139,422.26	2,032,985.47	0.31	27.44	
1,103.00	5.93	83.49	83.55	-260.61	1,098.89	17.15 S	79.76 E	139,423.10	2,032,995.13	0.44	27.94	
1,196.00	6.24	86.51	86.57	-168.14	1,191.36	16.30 S	89.58 E	139,423.95	2,033,004.95	0.48	28.44	
1,289.00	6.27	94.49	94.55	-75.69	1,283.81	16.39 S	99.69 E	139,423.86	2,033,015.06	0.93	29.92	
1,382.00	4.68	98.45	98.51	16.89	1,376.39	17.34 S	108.50 E	139,422.91	2,033,023.87	1.76	32.07	
1,474.00	4.95	99.88	99.94	108.56	1,468.06	18.58 S	116.12 E	139,421.67	2,033,031.49	0.32	34.34	
1,565.00	5.06	86.70	86.76	199.22	1,558.72	19.02 S	124.00 E	139,421.23	2,033,039.37	1.27	35.86	
1,656.00	5.08	83.53	83.59	289.86	1,649.36	18.33 S	132.01 E	139,421.92	2,033,047.38	0.31	36.28	
1,749.00	5.18	101.13	101.19	382.49	1,741.99	18.68 S	140.22 E	139,421.57	2,033,055.59	1.69	37.75	
1,848.00	5.09	100.44	100.50	481.10	1,840.60	20.34 S	148.92 E	139,419.91	2,033,064.29	0.11	40.59	
1,940.00	5.03	84.72	84.78	572.74	1,932.24	20.71 S	156.95 E	139,419.54	2,033,072.32	1.50	42.06	
2,035.00	5.45	85.46	85.52	667.35	2,026.85	19.97 S	165.60 E	139,420.28	2,033,080.97	0.45	42.51	
2,130.00	5.66	82.50	82.56	761.90	2,121.40	19.00 S	174.74 E	139,421.25	2,033,090.11	0.37	42.81	
2,225.00	5.64	81.78	81.84	856.44	2,215.94	17.72 S	184.00 E	139,422.53	2,033,099.37	0.08	42.81	
2,320.00	5.46	84.57	84.63	950.99	2,310.49	16.62 S	193.12 E	139,423.63	2,033,108.49	0.34	42.98	
2,415.00	7.85	84.90	84.96	1,045.35	2,404.85	15.62 S	204.09 E	139,424.63	2,033,119.46	2.52	43.49	
2,511.00	9.02	89.41	89.47	1,140.31	2,499.81	14.96 S	218.14 E	139,425.29	2,033,133.51	1.40	44.76	
2,606.00	10.26	91.61	91.67	1,233.96	2,593.46	15.12 S	234.05 E	139,425.13	2,033,149.42	1.36	47.11	
2,701.00	11.60	90.16	90.22	1,327.24	2,686.74	15.39 S	252.06 E	139,424.86	2,033,167.43	1.44	49.84	
2,796.00	11.69	89.35	89.41	1,420.28	2,779.78	15.30 S	271.23 E	139,424.95	2,033,186.60	0.20	52.39	
2,891.00	12.40	91.39	91.45	1,513.19	2,872.69	15.44 S	291.05 E	139,424.81	2,033,206.42	0.87	55.25	
2,986.00	13.30	91.84	91.90	1,605.81	2,965.31	16.04 S	312.17 E	139,424.21	2,033,227.54	0.95	58.74	
3,081.00	13.07	93.68	93.74	1,698.31	3,057.81	17.08 S	333.81 E	139,423.17	2,033,249.18	0.50	62.74	
3,176.00	11.68	96.03	96.09	1,791.10	3,150.60	18.78 S	354.10 E	139,421.47	2,033,269.47	1.56	67.21	
3,271.00	11.90	95.66	95.72	1,884.09	3,243.59	20.76 S	373.41 E	139,419.49	2,033,288.78	0.24	71.82	
3,367.00	11.34	88.44	88.50	1,978.13	3,337.63	21.47 S	392.69 E	139,418.78	2,033,308.06	1.62	75.18	
3,462.00	10.84	88.89	88.95	2,071.36	3,430.86	21.05 S	410.96 E	139,419.20	2,033,326.33	0.53	77.26	

**Design Report for Knorp Farms 3410 #34-1H - Final Survey**

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)    Easting (ft)		Map Coordinates Northing (ft)    Easting (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
3,557.00	10.55	88.25	88.31	2,164.71	3,524.21	20.61 S	428.58 E	139,419.64	2,033,343.95	0.33	79.25	
3,652.00	12.04	85.34	85.40	2,257.87	3,617.37	19.54 S	447.15 E	139,420.71	2,033,362.52	1.68	80.73	
3,747.00	12.20	86.78	86.84	2,350.75	3,710.25	18.17 S	467.05 E	139,422.08	2,033,382.42	0.36	82.11	
3,842.00	12.54	86.63	86.69	2,443.54	3,803.04	17.00 S	487.37 E	139,423.25	2,033,402.74	0.36	83.74	
3,937.00	13.28	88.19	88.25	2,536.14	3,895.64	16.05 S	508.57 E	139,424.20	2,033,423.94	0.86	85.71	
4,032.00	11.73	90.74	90.80	2,628.88	3,988.38	15.83 S	529.13 E	139,424.42	2,033,444.50	1.73	88.31	
4,127.00	11.94	91.81	91.87	2,721.87	4,081.37	16.26 S	548.61 E	139,423.99	2,033,463.98	0.32	91.42	
4,222.00	10.72	113.69	113.75	2,815.06	4,174.56	20.13 S	566.53 E	139,420.12	2,033,481.90	4.67	97.70	
4,254.00	11.18	128.57	128.63	2,846.48	4,205.98	23.26 S	571.69 E	139,416.99	2,033,487.06	8.92	101.51	
4,286.00	12.64	139.71	139.77	2,877.79	4,237.29	27.86 S	576.38 E	139,412.39	2,033,491.75	8.49	106.72	
4,317.00	14.97	145.00	145.06	2,907.90	4,267.40	33.73 S	580.87 E	139,406.52	2,033,496.24	8.54	113.15	
4,349.00	18.41	150.32	150.38	2,938.55	4,298.05	41.51 S	585.74 E	139,398.74	2,033,501.11	11.75	121.52	
4,381.00	21.93	154.14	154.20	2,968.58	4,328.08	51.28 S	590.85 E	139,388.97	2,033,506.22	11.74	131.90	
4,413.00	25.12	158.19	158.25	2,997.92	4,357.42	62.97 S	595.98 E	139,377.28	2,033,511.35	11.17	144.18	
4,444.00	27.32	164.96	165.02	3,025.73	4,385.23	75.95 S	600.28 E	139,364.30	2,033,515.64	11.97	157.63	
4,476.00	29.12	172.32	172.38	3,053.94	4,413.44	90.76 S	603.22 E	139,349.49	2,033,518.59	12.23	172.71	
4,508.00	31.11	177.56	177.62	3,081.62	4,441.12	106.74 S	604.62 E	139,333.51	2,033,519.98	10.30	188.73	
4,540.00	33.70	180.88	180.94	3,108.64	4,468.14	123.88 S	604.83 E	139,316.37	2,033,520.20	9.82	205.74	
4,571.00	36.59	182.99	183.05	3,133.99	4,493.49	141.71 S	604.22 E	139,298.54	2,033,519.59	10.11	223.32	
4,603.00	38.85	185.53	185.59	3,159.30	4,518.80	161.23 S	602.75 E	139,279.02	2,033,518.12	8.57	242.45	
4,635.00	41.64	186.01	186.07	3,183.72	4,543.22	181.80 S	600.67 E	139,258.45	2,033,516.04	8.77	262.53	
4,666.00	44.79	187.41	187.47	3,206.31	4,565.81	202.88 S	598.18 E	139,237.37	2,033,513.55	10.62	283.07	
4,698.00	48.03	186.34	186.40	3,228.37	4,587.87	225.88 S	595.42 E	139,214.37	2,033,510.78	10.41	305.48	
4,730.00	51.84	185.07	185.13	3,248.97	4,608.47	250.25 S	592.99 E	139,190.00	2,033,508.36	12.29	329.28	
4,761.00	55.60	185.18	185.24	3,267.31	4,626.81	275.13 S	590.76 E	139,165.12	2,033,506.13	12.13	353.62	
4,793.00	58.90	184.08	184.14	3,284.61	4,644.11	301.96 S	588.59 E	139,138.30	2,033,503.96	10.71	379.89	
4,825.00	62.09	182.77	182.83	3,300.37	4,659.87	329.75 S	586.93 E	139,110.50	2,033,502.30	10.59	407.20	
4,857.00	64.74	181.66	181.72	3,314.69	4,674.19	358.34 S	585.83 E	139,081.91	2,033,501.20	8.84	435.37	
4,888.00	67.48	181.70	181.76	3,327.25	4,686.75	386.67 S	585.00 E	139,053.58	2,033,500.37	8.84	463.32	
4,920.00	70.27	181.52	181.58	3,338.78	4,698.28	416.51 S	584.16 E	139,023.74	2,033,499.53	8.73	492.75	
4,952.00	73.08	181.07	181.13	3,348.84	4,708.34	446.87 S	583.47 E	138,993.38	2,033,498.84	8.88	522.74	
4,983.00	75.81	181.26	181.32	3,357.15	4,716.65	476.73 S	582.87 E	138,963.52	2,033,498.24	8.83	552.23	
5,015.00	78.86	181.62	181.68	3,364.17	4,723.67	507.94 S	582.08 E	138,932.31	2,033,497.45	9.59	583.03	
5,047.00	81.03	181.32	181.38	3,369.75	4,729.25	539.43 S	581.27 E	138,900.82	2,033,496.64	6.84	614.12	
5,075.00	82.91	180.60	180.66	3,373.66	4,733.16	567.15 S	580.81 E	138,873.10	2,033,496.18	7.18	641.51	
5,110.00	85.32	180.60	180.66	3,377.25	4,736.75	601.96 S	580.44 E	138,838.29	2,033,495.81	6.89	675.94	
5,141.00	87.13	180.13	180.19	3,379.29	4,738.79	632.90 S	580.25 E	138,807.36	2,033,495.62	6.03	706.56	

**Design Report for Knorp Farms 3410 #34-1H - Final Survey**

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
5,213.00	88.52	180.53	180.59	3,382.03	4,741.53	704.84 S	579.83 E	138,735.41	2,033,495.20	2.01	777.76	
5,245.00	89.88	179.71	179.77	3,382.47	4,741.97	736.84 S	579.77 E	138,703.42	2,033,495.14	4.96	809.45	
5,276.00	90.16	179.70	179.76	3,382.46	4,741.96	767.84 S	579.93 E	138,672.42	2,033,495.29	0.90	840.17	
5,307.00	90.31	179.49	179.55	3,382.33	4,741.83	798.83 S	580.15 E	138,641.42	2,033,495.51	0.83	870.91	
5,368.00	90.09	177.35	177.41	3,382.12	4,741.62	859.81 S	581.83 E	138,580.44	2,033,497.20	3.53	931.54	
5,458.00	89.35	176.01	176.07	3,382.56	4,742.06	949.65 S	587.04 E	138,490.60	2,033,502.41	1.70	1,021.25	
5,550.00	90.34	175.57	175.63	3,382.81	4,742.31	1,041.40 S	593.79 E	138,398.85	2,033,509.16	1.18	1,113.06	
5,643.00	90.77	176.21	176.27	3,381.91	4,741.41	1,134.16 S	600.46 E	138,306.09	2,033,515.83	0.83	1,205.85	
5,734.00	91.11	176.43	176.49	3,380.42	4,739.92	1,224.96 S	606.30 E	138,215.29	2,033,521.67	0.45	1,296.59	
5,826.00	89.75	177.14	177.20	3,379.73	4,739.23	1,316.81 S	611.46 E	138,123.44	2,033,526.83	1.67	1,388.28	
5,922.00	90.06	176.10	176.16	3,379.89	4,739.39	1,412.64 S	617.12 E	138,027.61	2,033,532.49	1.13	1,483.98	
6,017.00	88.18	174.67	174.73	3,381.34	4,740.84	1,507.31 S	624.76 E	137,932.94	2,033,540.13	2.49	1,578.81	
6,112.00	87.90	174.75	174.81	3,384.59	4,744.09	1,601.85 S	633.51 E	137,838.40	2,033,548.88	0.31	1,673.65	
6,207.00	88.27	174.98	175.04	3,387.77	4,747.27	1,696.42 S	642.01 E	137,743.83	2,033,557.38	0.46	1,768.49	
6,302.00	87.84	175.72	175.78	3,390.99	4,750.49	1,791.05 S	649.71 E	137,649.20	2,033,565.08	0.90	1,863.28	
6,380.20	86.98	177.28	177.34	3,394.52	4,754.02	1,869.03 S	654.48 E	137,571.23	2,033,569.85	2.27	1,941.17	Knorp Farms 3410 #34-1H Target A
6,397.00	86.80	177.61	177.67	3,395.43	4,754.93	1,885.78 S	655.23 E	137,554.47	2,033,570.60	2.27	1,957.87	
6,492.00	86.89	177.62	177.68	3,400.66	4,760.16	1,980.56 S	659.18 E	137,459.70	2,033,574.54	0.10	2,052.29	
6,587.00	87.72	178.24	178.30	3,405.13	4,764.63	2,075.39 S	662.60 E	137,364.87	2,033,577.97	1.09	2,146.70	
6,683.00	90.12	179.91	179.97	3,406.94	4,766.44	2,171.35 S	664.15 E	137,268.91	2,033,579.52	3.05	2,241.96	
6,778.00	89.20	178.35	178.41	3,407.50	4,767.00	2,266.33 S	665.59 E	137,173.92	2,033,580.96	1.91	2,336.24	
6,873.00	89.20	180.06	180.12	3,408.83	4,768.33	2,361.31 S	666.91 E	137,078.95	2,033,582.28	1.80	2,430.50	
6,968.00	90.83	180.66	180.72	3,408.80	4,768.30	2,456.30 S	666.32 E	136,983.95	2,033,581.68	1.83	2,524.52	
7,063.00	91.17	182.06	182.12	3,407.15	4,766.65	2,551.26 S	664.06 E	136,889.00	2,033,579.43	1.52	2,618.26	
7,158.00	89.08	181.13	181.19	3,406.94	4,766.44	2,646.22 S	661.42 E	136,794.04	2,033,576.79	2.41	2,711.96	
7,253.00	87.91	180.18	180.24	3,409.43	4,768.93	2,741.17 S	660.33 E	136,699.08	2,033,575.70	1.59	2,805.87	
7,348.00	88.98	182.29	182.35	3,412.01	4,771.51	2,836.11 S	658.28 E	136,604.15	2,033,573.65	2.49	2,899.63	
7,441.00	89.72	182.63	182.69	3,413.07	4,772.57	2,929.02 S	654.29 E	136,511.24	2,033,569.66	0.88	2,991.11	
7,536.00	89.85	182.59	182.65	3,413.42	4,772.92	3,023.92 S	649.97 E	136,416.34	2,033,565.34	0.14	3,084.51	
7,631.00	90.40	184.33	184.39	3,413.22	4,772.72	3,118.74 S	644.23 E	136,321.52	2,033,559.60	1.92	3,177.65	
7,726.00	87.63	183.77	183.83	3,414.85	4,774.35	3,213.48 S	637.53 E	136,226.78	2,033,552.89	2.97	3,270.57	
7,811.91	87.13	184.54	184.60	3,418.78	4,778.28	3,299.08 S	631.31 E	136,141.18	2,033,546.68	1.06	3,354.51	Knorp Farms 3410 #34-1H Target B
7,821.00	87.08	184.62	184.68	3,419.23	4,778.73	3,308.12 S	630.58 E	136,132.13	2,033,545.95	1.06	3,363.37	
7,917.00	87.19	185.09	185.15	3,424.03	4,783.53	3,403.66 S	622.47 E	136,036.60	2,033,537.84	0.50	3,456.89	
8,012.00	87.07	182.87	182.93	3,428.79	4,788.29	3,498.31 S	615.88 E	135,941.95	2,033,531.25	2.34	3,549.73	
8,107.00	88.42	180.86	180.92	3,432.53	4,792.03	3,593.17 S	612.80 E	135,847.08	2,033,528.16	2.55	3,643.28	
8,202.00	89.57	180.03	180.09	3,434.19	4,793.69	3,688.15 S	612.06 E	135,752.10	2,033,527.43	1.49	3,737.26	

**Design Report for Knorp Farms 3410 #34-1H - Final Survey**

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing	Easting	Northing	Easting			
8,297.00	91.60	179.35	179.41	3,433.22	4,792.72	3,783.14	S 612.57 E	135,657.11	2,033,527.94	2.25	3,831.42	
8,392.00	92.52	180.10	180.16	3,429.81	4,789.31	3,878.08	S 613.03 E	135,562.18	2,033,528.40	1.25	3,925.52	
8,487.00	91.48	178.66	178.72	3,426.49	4,785.99	3,973.01	S 614.06 E	135,467.25	2,033,529.42	1.87	4,019.69	
8,582.00	92.15	178.92	178.98	3,423.49	4,782.99	4,067.94	S 616.06 E	135,372.32	2,033,531.43	0.76	4,114.00	
8,677.00	90.68	179.11	179.17	3,421.14	4,780.64	4,162.90	S 617.69 E	135,277.36	2,033,533.06	1.56	4,208.28	
8,772.00	90.34	178.79	178.85	3,420.29	4,779.79	4,257.88	S 619.43 E	135,182.38	2,033,534.80	0.49	4,302.60	
8,867.00	88.89	176.83	176.89	3,420.93	4,780.43	4,352.80	S 623.06 E	135,087.46	2,033,538.43	2.57	4,397.12	
8,962.00	89.20	177.19	177.25	3,422.52	4,782.02	4,447.65	S 628.02 E	134,992.60	2,033,543.39	0.50	4,491.76	
9,057.00	90.00	177.46	177.52	3,423.18	4,782.68	4,542.55	S 632.45 E	134,897.71	2,033,547.82	0.89	4,586.36	
9,117.00	90.25	177.26	177.32	3,423.05	4,782.55	4,602.48	S 635.22 E	134,837.78	2,033,550.58	0.53	4,646.11	End MWD @ 9117.00 MD
9,166.00	90.25	177.26	177.32	3,422.83	4,782.33	4,651.43	S 637.56 E	134,788.83	2,033,552.93	0.00	4,694.91	Projection to TD @ 9166.00 MD - Knorp Farms 3410 #34-1H Target C

**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
142.00	141.99	-0.35	1.06	Start MWD @ 142.00 MD
9,117.00	4,782.55	-4,602.48	635.22	End MWD @ 9117.00 MD
9,166.00	4,782.33	-4,651.43	637.56	Projection to TD @ 9166.00 MD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	172.11	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
142.00	483.00	Run 0100	MWD+SC
630.00	5,141.00	Run 0200	MWD+SC
5,213.00	9,166.00	Run 0300	MWD+SC

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**Design Report for Knorp Farms 3410 #34-1H - Final Survey**

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**Design Targets**

Target Name	Dip	Dip	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	Angle	Dir.							
- Shape	()	()	()	()	()	()	()		

**Directional Difficulty Index**

Average Dogleg over Survey: 2.08 °/100ft      Maximum Dogleg over Survey: 12.29 °/100ft at 4,730.00 ft

Net Tortousity applicable to Plans: 1.01 °/100ft      Directional Difficulty Index: 6.281

**Audit Info**

**North Reference Sheet for Sec 34-T34S-R10W - Knorp Farms 3410 #34-1H - Wellbore #1**

All data is in Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to WELL @ 1359.50ft (Nabors F-01 (27.5')). Northing and Easting are relative to Knorp Farms 3410 #34-1H

Coordinate System is US State Plane 1927 (Exact solution), Kansas South 1502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 98° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:37° 16' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 1.00004976

Grid Coordinates of Well: 139,440.25 ft N, 2,032,915.37 ft E

Geographical Coordinates of Well: 37° 02' 58.42" N, 098° 23' 14.01" W

Grid Convergence at Surface is: 0.07°

Based upon Minimum Curvature type calculations, at a Measured Depth of 9,166.00ft  
the Bottom Hole Displacement is 4,694.92ft in the Direction of 172.20° (Grid).

Magnetic Convergence at surface is: -4.76° (13 December 2012, , BGGM2012)

