

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Hankins #31-22H**

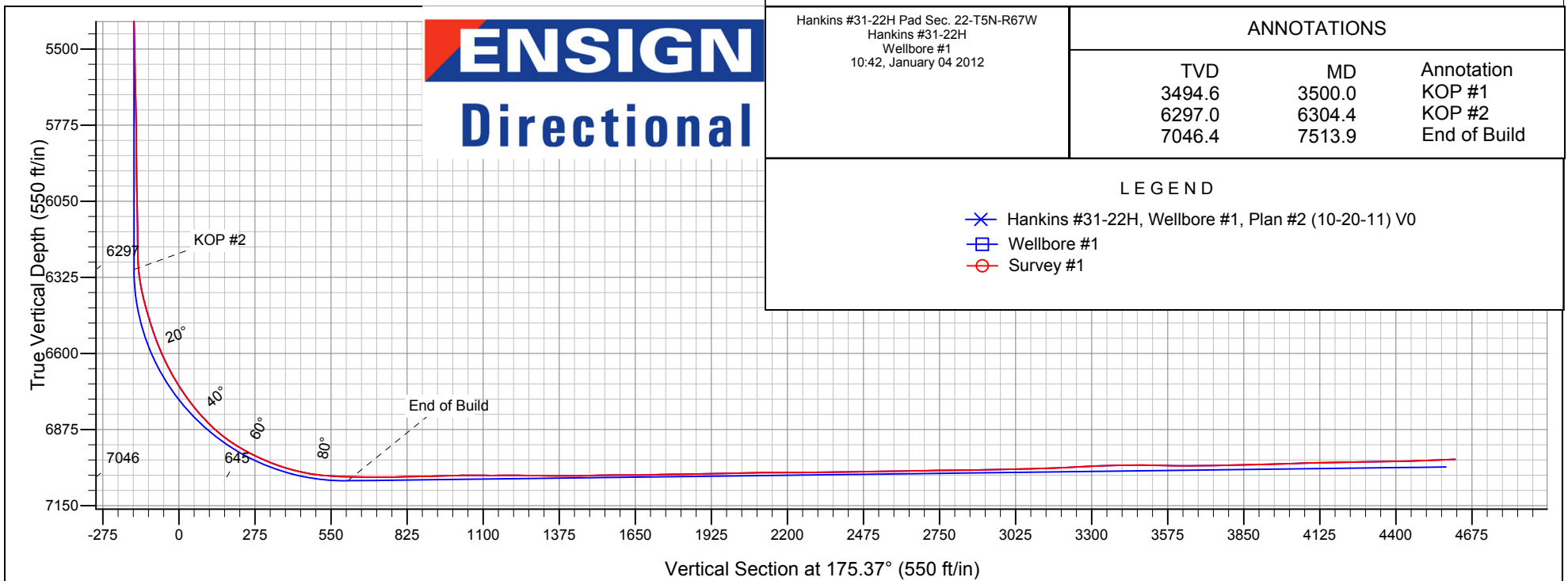
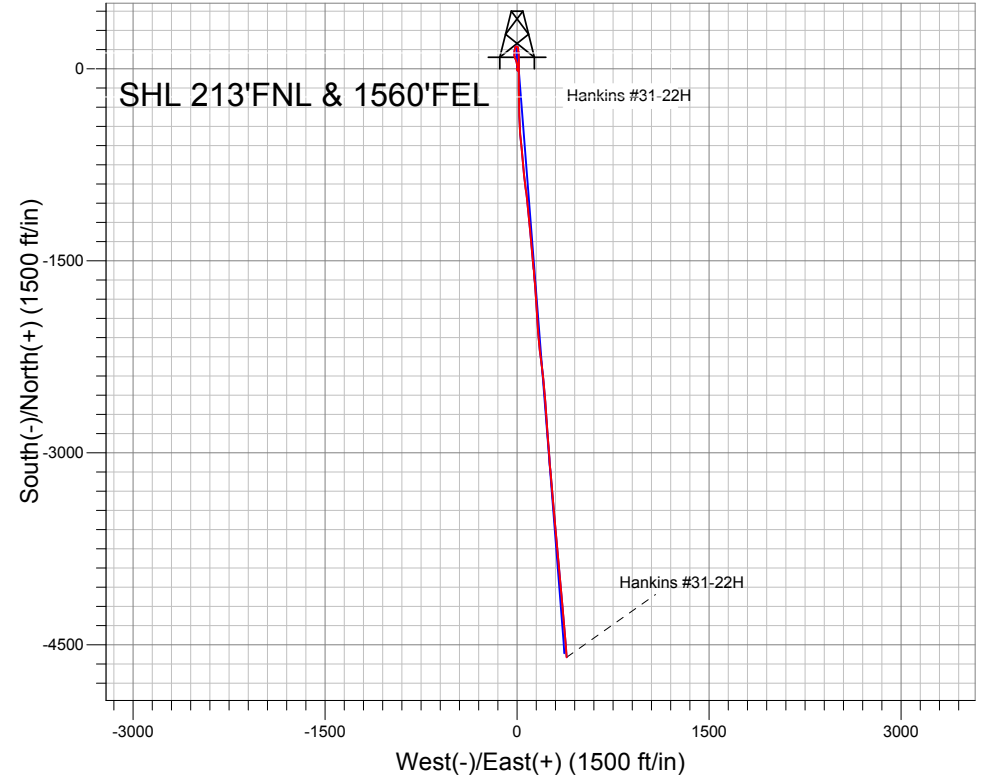
Surface Location: Hankins #31-22H Pad Sec. 22-T5N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5011.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1386197.13	3173971.80	40.391831	-104.875419	

RKB Ensign 32 - 15' WELL @ 5026.0ft (RKB Ensign 32 - 15')

FINAL SURVEY

Projected Bottom Hole Location
11,485' MD 6982' TVD 4598' S & 388' E of
SHL
92.5 degree Incl @ 175.2 degree AZM





Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R67W

Hankins #31-22H Pad Sec. 22-T5N-R67W

Hankins #31-22H

Wellbore #1

Survey: Survey #1

Standard Survey Report

04 January, 2012

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Hankins #31-22H
Project:	SEC.22-T5N-R67W	TVD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Site:	Hankins #31-22H Pad Sec. 22-T5N-R67W	MD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Well:	Hankins #31-22H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.22-T5N-R67W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		Hankins #31-22H Pad Sec. 22-T5N-R67W			
Site Position:		Northing:	1,386,197.14 ft	Latitude:	40.391831
From:	Lat/Long	Easting:	3,173,971.80 ft	Longitude:	-104.875419
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.40 °

Well	Hankins #31-22H					
Well Position	+N-S	0.0 ft	Northing:	1,386,197.13 ft	Latitude:	40.391831
	+E-W	0.0 ft	Easting:	3,173,971.80 ft	Longitude:	-104.875419
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,011.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/20/2011	8.88	67.01	53,077

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	175.37	

Survey Program	Date	1/4/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
855.0	11,485.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	168.10	1.0	0.0	0.0	0.0	0.22	0.22	0.00	
SECTIONLINE 213'N OF SHL										
1.3	0.00	168.10	1.3	0.0	0.0	0.0	0.22	0.22	0.00	
BHL HARDLINE 460'FSL										
3.6	0.01	168.10	3.6	0.0	0.0	0.0	0.22	0.22	0.00	
SHL HARDLINE 460'FNL										
855.0	1.90	168.10	854.8	-13.9	2.9	14.1	0.22	0.22	0.00	
947.0	0.70	113.70	946.8	-15.6	3.8	15.8	1.74	-1.30	-59.13	
1,039.0	3.10	356.70	1,038.8	-13.3	4.1	13.6	3.78	2.61	-127.17	
1,131.0	4.60	357.50	1,130.6	-7.2	3.8	7.4	1.63	1.63	0.87	
1,224.0	5.00	355.70	1,223.2	0.6	3.4	-0.3	0.46	0.43	-1.94	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,317.0	5.30	355.80	1,315.9	8.9	2.7	-8.7	0.32	0.32	0.11
1,410.0	5.50	355.30	1,408.5	17.7	2.1	-17.4	0.22	0.22	-0.54
1,503.0	5.60	353.60	1,501.0	26.6	1.2	-26.4	0.21	0.11	-1.83
1,597.0	5.40	351.50	1,594.6	35.5	0.0	-35.4	0.30	-0.21	-2.23
1,690.0	5.40	344.30	1,687.2	44.1	-1.8	-44.1	0.73	0.00	-7.74
1,783.0	4.90	341.40	1,779.8	52.1	-4.3	-52.2	0.61	-0.54	-3.12
1,876.0	5.20	343.70	1,872.4	59.9	-6.7	-60.2	0.39	0.32	2.47
1,969.0	5.10	342.50	1,965.1	67.9	-9.1	-68.4	0.16	-0.11	-1.29
2,062.0	3.80	340.50	2,057.8	74.7	-11.4	-75.4	1.41	-1.40	-2.15
2,155.0	3.50	336.40	2,150.6	80.2	-13.6	-81.0	0.43	-0.32	-4.41
2,248.0	3.00	337.80	2,243.4	85.1	-15.6	-86.0	0.54	-0.54	1.51
2,341.0	2.50	329.20	2,336.3	89.1	-17.6	-90.2	0.70	-0.54	-9.25
2,433.0	2.30	354.60	2,428.3	92.6	-18.8	-93.8	1.17	-0.22	27.61
2,527.0	1.80	347.10	2,522.2	95.9	-19.3	-97.2	0.60	-0.53	-7.98
2,620.0	1.50	354.60	2,615.2	98.6	-19.7	-99.8	0.40	-0.32	8.06
2,712.0	1.70	349.50	2,707.1	101.1	-20.1	-102.4	0.27	0.22	-5.54
2,805.0	1.50	345.90	2,800.1	103.7	-20.6	-105.0	0.24	-0.22	-3.87
2,899.0	1.50	349.30	2,894.1	106.1	-21.2	-107.4	0.09	0.00	3.62
2,992.0	2.50	6.10	2,987.0	109.3	-21.2	-110.6	1.24	1.08	18.06
3,085.0	2.30	14.00	3,079.9	113.1	-20.5	-114.4	0.42	-0.22	8.49
3,178.0	2.50	17.10	3,172.8	116.8	-19.5	-118.0	0.26	0.22	3.33
3,271.0	2.10	357.50	3,265.8	120.5	-19.0	-121.6	0.94	-0.43	-21.08
3,363.0	1.90	342.10	3,357.7	123.6	-19.5	-124.8	0.62	-0.22	-16.74
3,458.0	1.50	329.90	3,452.7	126.2	-20.6	-127.4	0.57	-0.42	-12.84
3,500.0	1.61	340.34	3,494.6	127.2	-21.1	-128.5	0.72	0.26	24.85
KOP #1									
3,551.0	1.80	350.90	3,545.6	128.7	-21.4	-130.0	0.72	0.38	20.71
3,644.0	2.80	9.80	3,638.5	132.4	-21.3	-133.7	1.34	1.08	20.32
3,738.0	3.40	15.60	3,732.4	137.3	-20.1	-138.5	0.72	0.64	6.17
3,831.0	4.00	14.60	3,825.2	143.1	-18.6	-144.1	0.65	0.65	-1.08
3,924.0	4.50	8.30	3,918.0	149.9	-17.2	-150.8	0.73	0.54	-6.77
4,016.0	4.70	8.10	4,009.7	157.2	-16.2	-158.0	0.22	0.22	-0.22
4,110.0	3.60	2.80	4,103.4	163.9	-15.5	-164.6	1.24	-1.17	-5.64
4,203.0	2.80	20.10	4,196.3	169.0	-14.6	-169.6	1.34	-0.86	18.60
4,296.0	2.50	50.00	4,289.2	172.4	-12.2	-172.8	1.50	-0.32	32.15
4,390.0	2.00	82.80	4,383.1	173.9	-9.0	-174.1	1.44	-0.53	34.89
4,483.0	2.50	88.60	4,476.0	174.2	-5.4	-174.1	0.59	0.54	6.24
4,576.0	1.50	122.70	4,569.0	173.6	-2.4	-173.2	1.63	-1.08	36.67
4,669.0	1.70	129.40	4,661.9	172.0	-0.3	-171.5	0.29	0.22	7.20
4,763.0	1.10	123.10	4,755.9	170.7	1.6	-170.0	0.66	-0.64	-6.70
4,855.0	1.20	129.70	4,847.9	169.6	3.0	-168.8	0.18	0.11	7.17
4,948.0	0.90	119.20	4,940.9	168.6	4.4	-167.7	0.38	-0.32	-11.29
5,041.0	1.10	127.40	5,033.9	167.7	5.8	-166.7	0.26	0.22	8.82
5,134.0	0.80	135.60	5,126.9	166.7	6.9	-165.6	0.35	-0.32	8.82
5,227.0	0.70	168.00	5,219.8	165.7	7.5	-164.5	0.46	-0.11	34.84
5,320.0	0.80	168.00	5,312.8	164.5	7.8	-163.3	0.11	0.11	0.00
5,413.0	0.80	150.60	5,405.8	163.3	8.2	-162.1	0.26	0.00	-18.71
5,507.0	1.20	172.50	5,499.8	161.7	8.7	-160.5	0.58	0.43	23.30
5,599.0	1.50	166.40	5,591.8	159.6	9.1	-158.4	0.36	0.33	-6.63
5,693.0	1.30	172.80	5,685.8	157.3	9.5	-156.1	0.27	-0.21	6.81
5,786.0	0.70	215.90	5,778.8	155.8	9.3	-154.6	0.99	-0.65	46.34
5,879.0	0.40	210.10	5,871.7	155.1	8.8	-153.9	0.33	-0.32	-6.24
5,969.0	0.90	192.60	5,961.7	154.1	8.5	-153.0	0.59	0.56	-19.44

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6,063.0	1.10	176.90	6,055.7	152.5	8.4	-151.3	0.36	0.21	-16.70
6,159.0	0.70	183.30	6,151.7	151.0	8.4	-149.8	0.43	-0.42	6.67
6,190.0	0.90	193.10	6,182.7	150.6	8.3	-149.4	0.78	0.65	31.61
6,221.0	0.90	199.80	6,213.7	150.1	8.2	-149.0	0.34	0.00	21.61
6,252.0	1.10	200.00	6,244.7	149.6	8.0	-148.5	0.65	0.65	0.65
6,283.0	3.20	178.20	6,275.7	148.5	7.9	-147.3	7.15	6.77	-70.32
6,304.4	5.33	172.09	6,297.0	146.9	8.1	-145.8	10.18	9.97	-28.54
KOP #2									
6,314.0	6.30	170.70	6,306.6	145.9	8.2	-144.8	10.18	10.07	-14.50
6,345.0	9.00	170.20	6,337.3	141.9	8.9	-140.7	8.71	8.71	-1.61
6,377.0	11.20	171.20	6,368.8	136.3	9.8	-135.1	6.90	6.88	3.13
6,408.0	13.50	172.60	6,399.1	129.8	10.8	-128.5	7.48	7.42	4.52
6,439.0	15.30	174.60	6,429.1	122.1	11.6	-120.8	6.02	5.81	6.45
6,470.0	16.40	176.90	6,458.9	113.6	12.2	-112.3	4.09	3.55	7.42
6,501.0	17.40	178.60	6,488.6	104.6	12.6	-103.3	3.60	3.23	5.48
6,532.0	18.70	179.60	6,518.1	95.0	12.7	-93.7	4.31	4.19	3.23
6,563.0	19.90	178.60	6,547.3	84.8	12.9	-83.5	4.01	3.87	-3.23
6,593.0	21.90	177.40	6,575.3	74.1	13.3	-72.8	6.82	6.67	-4.00
6,625.0	24.00	177.50	6,604.8	61.6	13.8	-60.3	6.56	6.56	0.31
6,656.0	26.20	178.70	6,632.9	48.5	14.3	-47.2	7.28	7.10	3.87
6,687.0	28.40	179.90	6,660.4	34.3	14.4	-33.0	7.32	7.10	3.87
6,718.0	30.60	181.10	6,687.4	19.0	14.3	-17.8	7.35	7.10	3.87
6,749.0	32.00	180.00	6,713.9	2.9	14.1	-1.8	4.88	4.52	-3.55
6,780.0	34.00	179.90	6,739.9	-14.0	14.1	15.1	6.45	6.45	-0.32
6,811.0	36.40	180.90	6,765.2	-31.8	14.0	32.9	7.96	7.74	3.23
6,842.0	39.00	180.30	6,789.7	-50.8	13.8	51.7	8.47	8.39	-1.94
6,873.0	40.80	179.70	6,813.5	-70.7	13.8	71.6	5.94	5.81	-1.94
6,904.0	43.00	179.70	6,836.6	-91.4	13.9	92.2	7.10	7.10	0.00
6,935.0	45.60	180.00	6,858.8	-113.0	14.0	113.8	8.41	8.39	0.97
6,966.0	48.80	180.10	6,879.8	-135.8	14.0	136.5	10.33	10.32	0.32
6,997.0	52.10	179.50	6,899.6	-159.7	14.1	160.3	10.75	10.65	-1.94
7,028.0	55.80	179.70	6,917.8	-184.7	14.2	185.3	11.95	11.94	0.65
7,060.0	58.60	178.70	6,935.1	-211.6	14.6	212.1	9.14	8.75	-3.13
7,091.0	61.30	179.70	6,950.7	-238.4	15.0	238.9	9.15	8.71	3.23
7,122.0	63.60	179.20	6,965.0	-265.9	15.2	266.3	7.56	7.42	-1.61
7,153.0	65.60	178.90	6,978.3	-293.9	15.7	294.2	6.51	6.45	-0.97
7,184.0	67.60	178.60	6,990.6	-322.4	16.3	322.6	6.51	6.45	-0.97
7,215.0	69.70	179.10	7,001.9	-351.2	16.9	351.4	6.94	6.77	1.61
7,246.0	72.40	178.60	7,012.0	-380.5	17.5	380.7	8.84	8.71	-1.61
7,277.0	75.60	177.40	7,020.5	-410.3	18.5	410.5	10.97	10.32	-3.87
7,308.0	77.60	177.20	7,027.7	-440.4	20.0	440.6	6.48	6.45	-0.65
7,339.0	79.20	176.70	7,033.9	-470.8	21.6	471.0	5.40	5.16	-1.61
7,370.0	82.80	175.60	7,038.8	-501.3	23.6	501.6	12.13	11.61	-3.55
7,401.0	86.30	173.70	7,041.7	-532.0	26.5	532.4	12.83	11.29	-6.13
7,432.0	87.70	173.10	7,043.3	-562.8	30.1	563.4	4.91	4.52	-1.94
7,492.0	87.90	175.20	7,045.6	-622.4	36.2	623.3	3.51	0.33	3.50
7,513.9	88.38	175.68	7,046.4	-644.2	37.9	645.2	3.09	2.19	2.19
End of Build									
7,524.0	88.60	175.90	7,046.6	-654.3	38.7	655.3	3.09	2.19	2.19
7,555.0	89.30	174.60	7,047.2	-685.2	41.2	686.3	4.76	2.26	-4.19
7,587.0	90.70	174.00	7,047.2	-717.0	44.4	718.3	4.76	4.38	-1.88
7,618.0	90.20	175.20	7,046.9	-747.9	47.3	749.3	4.19	-1.61	3.87
7,651.0	91.40	174.90	7,046.5	-780.8	50.2	782.3	3.75	3.64	-0.91

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7,683.0	92.00	173.50	7,045.5	-812.6	53.4	814.2	4.76	1.88	-4.38
7,714.0	91.60	174.30	7,044.6	-843.4	56.7	845.2	2.88	-1.29	2.58
7,747.0	90.80	173.10	7,043.9	-876.2	60.3	878.2	4.37	-2.42	-3.64
7,778.0	90.90	173.50	7,043.4	-907.0	63.9	909.2	1.33	0.32	1.29
7,810.0	91.60	172.70	7,042.7	-938.7	67.8	941.1	3.32	2.19	-2.50
7,842.0	91.90	172.20	7,041.7	-970.4	72.0	973.1	1.82	0.94	-1.56
7,874.0	91.50	173.00	7,040.8	-1,002.2	76.1	1,005.0	2.79	-1.25	2.50
7,906.0	90.20	174.40	7,040.3	-1,034.0	79.6	1,037.0	5.97	-4.06	4.38
7,937.0	89.60	174.50	7,040.4	-1,064.8	82.6	1,068.0	1.96	-1.94	0.32
7,969.0	89.60	174.60	7,040.6	-1,096.7	85.6	1,100.0	0.31	0.00	0.31
8,001.0	90.10	173.80	7,040.7	-1,128.5	88.9	1,132.0	2.95	1.56	-2.50
8,033.0	90.80	174.50	7,040.4	-1,160.3	92.1	1,164.0	3.09	2.19	2.19
8,065.0	90.30	174.20	7,040.1	-1,192.2	95.3	1,196.0	1.82	-1.56	-0.94
8,096.0	89.20	175.50	7,040.3	-1,223.1	98.1	1,227.0	5.49	-3.55	4.19
8,128.0	89.10	174.80	7,040.7	-1,254.9	100.8	1,259.0	2.21	-0.31	-2.19
8,160.0	89.30	174.50	7,041.2	-1,286.8	103.8	1,291.0	1.13	0.63	-0.94
8,192.0	89.40	175.10	7,041.5	-1,318.7	106.7	1,323.0	1.90	0.31	1.88
8,224.0	89.50	174.90	7,041.8	-1,350.5	109.5	1,355.0	0.70	0.31	-0.63
8,256.0	89.40	173.90	7,042.2	-1,382.4	112.6	1,387.0	3.14	-0.31	-3.13
8,288.0	90.50	175.10	7,042.2	-1,414.2	115.6	1,419.0	5.09	3.44	3.75
8,320.0	91.00	175.00	7,041.8	-1,446.1	118.4	1,451.0	1.59	1.56	-0.31
8,352.0	91.50	175.30	7,041.1	-1,478.0	121.1	1,482.9	1.82	1.56	0.94
8,383.0	91.60	174.60	7,040.2	-1,508.9	123.8	1,513.9	2.28	0.32	-2.26
8,415.0	90.80	173.80	7,039.6	-1,540.7	127.1	1,545.9	3.54	-2.50	-2.50
8,447.0	90.00	175.80	7,039.3	-1,572.6	130.0	1,577.9	6.73	-2.50	6.25
8,479.0	90.00	176.00	7,039.3	-1,604.5	132.3	1,609.9	0.63	0.00	0.63
8,511.0	90.20	174.60	7,039.3	-1,636.4	134.9	1,641.9	4.42	0.63	-4.38
8,543.0	90.50	175.10	7,039.1	-1,668.2	137.8	1,673.9	1.82	0.94	1.56
8,575.0	91.00	174.60	7,038.7	-1,700.1	140.6	1,705.9	2.21	1.56	-1.56
8,607.0	91.80	174.80	7,037.9	-1,732.0	143.6	1,737.9	2.58	2.50	0.63
8,638.0	91.50	175.90	7,037.0	-1,762.8	146.1	1,768.9	3.68	-0.97	3.55
8,670.0	90.50	176.90	7,036.4	-1,794.8	148.1	1,800.9	4.42	-3.13	3.13
8,702.0	90.50	176.10	7,036.1	-1,826.7	150.1	1,832.9	2.50	0.00	-2.50
8,734.0	91.00	176.30	7,035.7	-1,858.6	152.2	1,864.9	1.68	1.56	0.63
8,768.0	91.00	177.00	7,035.1	-1,892.6	154.2	1,898.8	2.06	0.00	2.06
8,802.0	91.40	177.10	7,034.4	-1,926.5	155.9	1,932.8	1.21	1.18	0.29
8,834.0	91.60	177.10	7,033.6	-1,958.5	157.5	1,964.8	0.63	0.63	0.00
8,866.0	92.10	177.20	7,032.6	-1,990.4	159.1	1,996.8	1.59	1.56	0.31
8,898.0	91.10	176.20	7,031.7	-2,022.3	161.0	2,028.7	4.42	-3.13	-3.13
8,930.0	90.30	175.60	7,031.3	-2,054.3	163.2	2,060.7	3.12	-2.50	-1.88
8,961.0	90.20	174.30	7,031.1	-2,085.1	166.0	2,091.7	4.21	-0.32	-4.19
8,993.0	90.60	173.50	7,030.9	-2,117.0	169.4	2,123.7	2.80	1.25	-2.50
9,025.0	90.90	174.40	7,030.5	-2,148.8	172.7	2,155.7	2.96	0.94	2.81
9,057.0	90.90	173.30	7,030.0	-2,180.6	176.2	2,187.7	3.44	0.00	-3.44
9,089.0	89.80	173.30	7,029.8	-2,212.4	179.9	2,219.7	3.44	-3.44	0.00
9,121.0	90.00	173.50	7,029.8	-2,244.2	183.6	2,251.7	0.88	0.63	0.63
9,153.0	90.40	173.10	7,029.7	-2,275.9	187.3	2,283.6	1.77	1.25	-1.25
9,185.0	90.80	173.20	7,029.4	-2,307.7	191.1	2,315.6	1.29	1.25	0.31
9,217.0	91.50	173.80	7,028.8	-2,339.5	194.8	2,347.6	2.88	2.19	1.88
9,248.0	90.40	174.10	7,028.2	-2,370.3	198.0	2,378.6	3.68	-3.55	0.97
9,280.0	90.20	173.20	7,028.1	-2,402.1	201.6	2,410.6	2.88	-0.63	-2.81
9,312.0	90.50	173.80	7,027.9	-2,433.9	205.2	2,442.5	2.10	0.94	1.88
9,344.0	91.20	174.80	7,027.4	-2,465.8	208.4	2,474.5	3.81	2.19	3.13

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Hankins #31-22H
Project:	SEC.22-T5N-R67W	TVD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Site:	Hankins #31-22H Pad Sec. 22-T5N-R67W	MD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Well:	Hankins #31-22H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,376.0	91.60	174.40	7,026.6	-2,497.6	211.4	2,506.5	1.77	1.25	-1.25
9,408.0	90.50	175.10	7,026.0	-2,529.5	214.3	2,538.5	4.07	-3.44	2.19
9,440.0	90.90	174.70	7,025.6	-2,561.3	217.1	2,570.5	1.77	1.25	-1.25
9,472.0	91.50	175.30	7,025.0	-2,593.2	219.9	2,602.5	2.65	1.88	1.88
9,503.0	90.60	175.70	7,024.4	-2,624.1	222.4	2,633.5	3.18	-2.90	1.29
9,535.0	90.60	176.00	7,024.1	-2,656.0	224.7	2,665.5	0.94	0.00	0.94
9,566.0	91.10	176.20	7,023.6	-2,686.9	226.8	2,696.5	1.74	1.61	0.65
9,599.0	91.70	175.60	7,022.8	-2,719.8	229.1	2,729.5	2.57	1.82	-1.82
9,631.0	90.50	175.90	7,022.2	-2,751.7	231.5	2,761.5	3.87	-3.75	0.94
9,663.0	90.50	176.80	7,021.9	-2,783.7	233.6	2,793.5	2.81	0.00	2.81
9,695.0	90.50	176.10	7,021.6	-2,815.6	235.5	2,825.4	2.19	0.00	-2.19
9,727.0	90.70	175.90	7,021.3	-2,847.5	237.8	2,857.4	0.88	0.63	-0.63
9,759.0	90.70	176.20	7,020.9	-2,879.5	240.0	2,889.4	0.94	0.00	0.94
9,790.0	90.90	175.30	7,020.5	-2,910.4	242.3	2,920.4	2.97	0.65	-2.90
9,822.0	91.20	176.00	7,019.9	-2,942.3	244.7	2,952.4	2.38	0.94	2.19
9,854.0	91.40	175.20	7,019.2	-2,974.2	247.2	2,984.4	2.58	0.63	-2.50
9,886.0	91.90	176.00	7,018.2	-3,006.1	249.6	3,016.4	2.95	1.56	2.50
9,918.0	91.80	175.90	7,017.2	-3,038.0	251.9	3,048.4	0.44	-0.31	-0.31
9,950.0	91.60	175.30	7,016.3	-3,069.9	254.3	3,080.4	1.98	-0.63	-1.88
9,982.0	91.60	175.00	7,015.4	-3,101.7	257.0	3,112.4	0.94	0.00	-0.94
10,013.0	91.80	175.70	7,014.4	-3,132.6	259.5	3,143.3	2.35	0.65	2.26
10,045.0	91.80	174.60	7,013.4	-3,164.5	262.2	3,175.3	3.44	0.00	-3.44
10,076.0	92.90	175.10	7,012.2	-3,195.3	265.0	3,206.3	3.90	3.55	1.61
10,108.0	93.20	174.70	7,010.5	-3,227.2	267.9	3,238.3	1.56	0.94	-1.25
10,139.0	93.60	174.10	7,008.6	-3,258.0	270.9	3,269.2	2.32	1.29	-1.94
10,171.0	92.70	174.70	7,006.9	-3,289.8	274.0	3,301.1	3.38	-2.81	1.88
10,203.0	91.40	174.90	7,005.7	-3,321.6	276.9	3,333.1	4.11	-4.06	0.63
10,235.0	91.00	175.30	7,005.1	-3,353.5	279.6	3,365.1	1.77	-1.25	1.25
10,267.0	91.20	175.40	7,004.4	-3,385.4	282.2	3,397.1	0.70	0.63	0.31
10,299.0	91.50	174.70	7,003.7	-3,417.2	285.0	3,429.1	2.38	0.94	-2.19
10,331.0	90.50	174.80	7,003.1	-3,449.1	287.9	3,461.1	3.14	-3.13	0.31
10,362.0	89.20	175.40	7,003.2	-3,480.0	290.6	3,492.1	4.62	-4.19	1.94
10,394.0	88.40	175.90	7,003.9	-3,511.9	293.0	3,524.1	2.95	-2.50	1.56
10,426.0	88.70	174.90	7,004.7	-3,543.8	295.6	3,556.1	3.26	0.94	-3.13
10,457.0	88.90	175.10	7,005.3	-3,574.6	298.3	3,587.1	0.91	0.65	0.65
10,489.0	89.70	175.20	7,005.7	-3,606.5	301.0	3,619.1	2.52	2.50	0.31
10,521.0	90.20	175.30	7,005.8	-3,638.4	303.6	3,651.1	1.59	1.56	0.31
10,553.0	90.70	174.60	7,005.5	-3,670.3	306.4	3,683.1	2.69	1.56	-2.19
10,585.0	90.10	175.30	7,005.3	-3,702.2	309.2	3,715.1	2.88	-1.88	2.19
10,617.0	91.60	174.90	7,004.8	-3,734.1	312.0	3,747.0	4.85	4.69	-1.25
10,649.0	91.50	175.20	7,003.9	-3,765.9	314.7	3,779.0	0.99	-0.31	0.94
10,681.0	91.00	174.80	7,003.2	-3,797.8	317.5	3,811.0	2.00	-1.56	-1.25
10,713.0	91.60	175.00	7,002.5	-3,829.7	320.4	3,843.0	1.98	1.88	0.63
10,745.0	90.90	174.60	7,001.8	-3,861.5	323.3	3,875.0	2.52	-2.19	-1.25
10,776.0	91.40	174.60	7,001.2	-3,892.4	326.2	3,906.0	1.61	1.61	0.00
10,808.0	91.70	174.20	7,000.3	-3,924.2	329.3	3,938.0	1.56	0.94	-1.25
10,840.0	91.40	175.00	6,999.5	-3,956.1	332.3	3,970.0	2.67	-0.94	2.50
10,872.0	91.60	174.70	6,998.6	-3,987.9	335.2	4,002.0	1.13	0.63	-0.94
10,904.0	92.00	174.90	6,997.6	-4,019.8	338.1	4,033.9	1.40	1.25	0.63
10,936.0	91.90	175.08	6,996.5	-4,051.6	340.9	4,065.9	0.64	-0.31	0.56
10,968.0	91.70	173.60	6,995.5	-4,083.5	344.0	4,097.9	4.66	-0.63	-4.63
11,000.0	92.00	173.90	6,994.5	-4,115.2	347.5	4,129.9	1.33	0.94	0.94
11,031.0	90.90	175.10	6,993.7	-4,146.1	350.5	4,160.9	5.25	-3.55	3.87
11,063.0	90.60	174.50	6,993.3	-4,178.0	353.4	4,192.8	2.10	-0.94	-1.88

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Hankins #31-22H
Project:	SEC.22-T5N-R67W	TVD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Site:	Hankins #31-22H Pad Sec. 22-T5N-R67W	MD Reference:	WELL @ 5026.0ft (RKB Ensign 32 - 15')
Well:	Hankins #31-22H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,095.0	90.90	175.30	6,992.9	-4,209.8	356.2	4,224.8	2.67	0.94	2.50
11,127.0	91.20	175.30	6,992.3	-4,241.7	358.9	4,256.8	0.94	0.94	0.00
11,159.0	91.50	174.60	6,991.5	-4,273.6	361.7	4,288.8	2.38	0.94	-2.19
11,191.0	90.50	175.40	6,991.0	-4,305.5	364.5	4,320.8	4.00	-3.13	2.50
11,223.0	90.70	175.80	6,990.6	-4,337.4	366.9	4,352.8	1.40	0.63	1.25
11,255.0	90.90	175.60	6,990.2	-4,369.3	369.3	4,384.8	0.88	0.63	-0.63
11,286.0	91.70	174.90	6,989.5	-4,400.1	371.9	4,415.8	3.43	2.58	-2.26
11,318.0	91.50	175.00	6,988.6	-4,432.0	374.7	4,447.8	0.70	-0.63	0.31
11,350.0	91.70	175.90	6,987.7	-4,463.9	377.2	4,479.8	2.88	0.63	2.81
11,382.0	92.00	175.60	6,986.7	-4,495.8	379.6	4,511.8	1.33	0.94	-0.94
11,414.0	92.30	175.50	6,985.5	-4,527.7	382.1	4,543.7	0.99	0.94	-0.31
11,439.0	92.50	175.20	6,984.4	-4,552.6	384.1	4,568.7	1.44	0.80	-1.20
BHL 500'FSL, 1190'FEL									
11,485.0	92.50	175.20	6,982.4	-4,598.4	387.9	4,614.7	0.00	0.00	0.00

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,500.0	3,494.6	127.2	-21.1	KOP #1
6,304.4	6,297.0	146.9	8.1	KOP #2
7,513.9	7,046.4	-644.2	37.9	End of Build

Checked By: _____	Approved By: _____	Date: _____
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