

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alles 22S-432 Sidetrack**

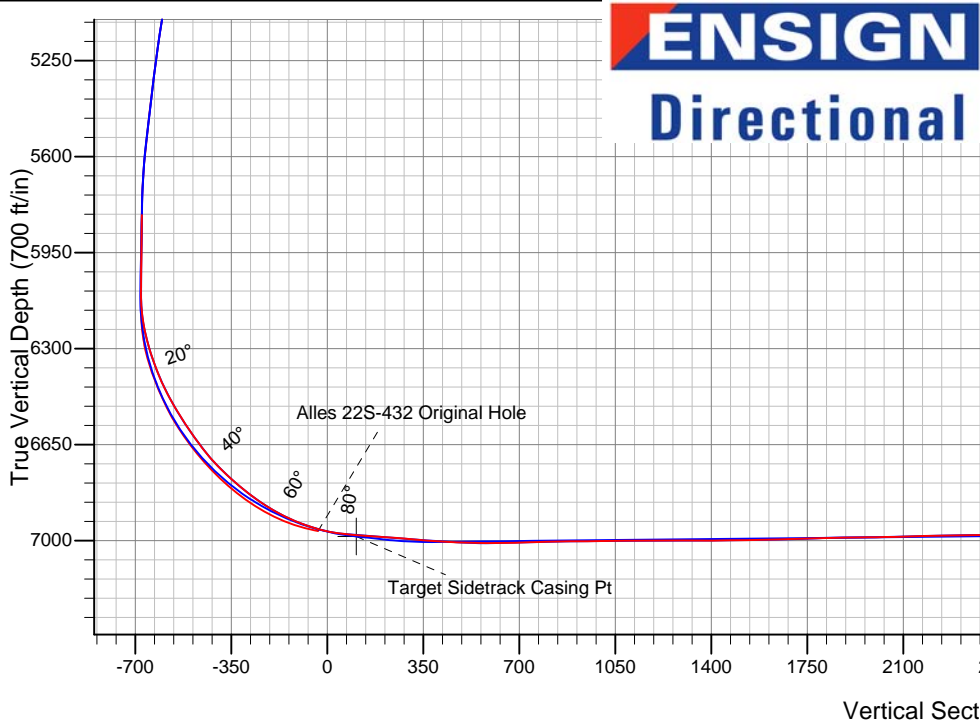
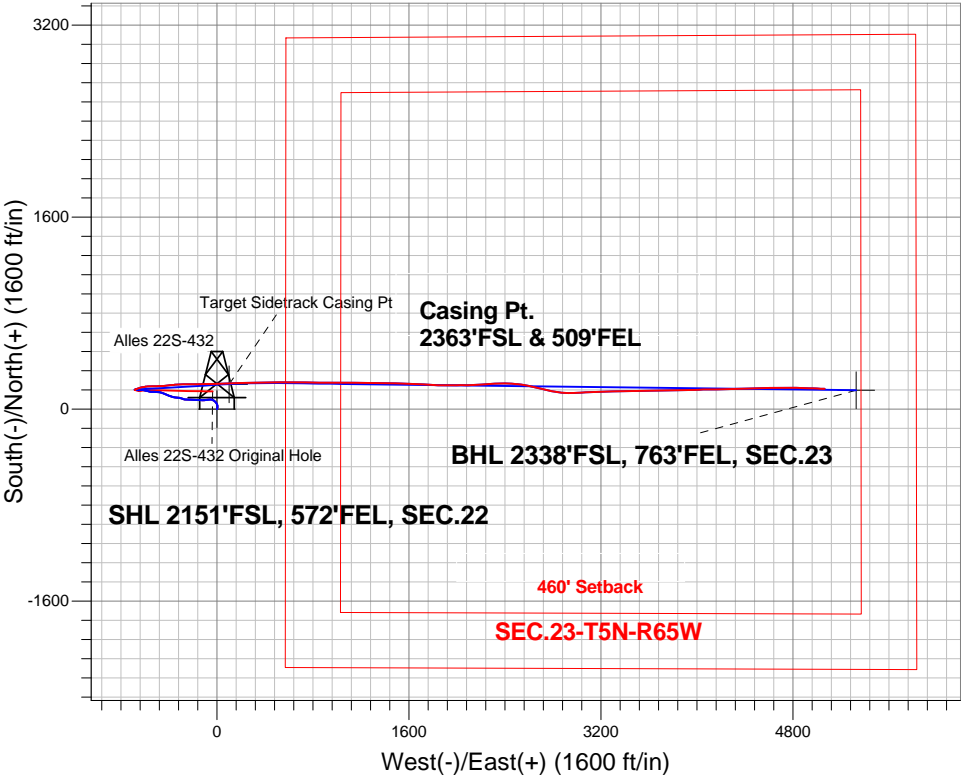
Surface Location: Alles 22S-HZ Pad Sec.22-T5N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4645.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1383673.18	3239030.56	40.383410	-104.641950	
RKB - 15' WELL @ 4660.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location  
12411'MD 6961'TVD 169'N & 5064'E of SHL  
91.4 degree Incl @ 92.5 degree AZM



Alles 22S-HZ Pad Sec.22-T5N-R65W  
Alles 22S-432  
Wellbore #2  
10:33, April 04 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Alles 22S-432, Wellbore #1, Wellbore #1 V0
- Alles 22S-432, Wellbore #1, Plan #5 (3-10-14) Sidetrack V0
- Wellbore #2
- Survey #1

BHL 2338'FSL, 763'FEL, SEC.23



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R65W**

**Alles 22S-HZ Pad Sec.22-T5N-R65W**

**Alles 22S-432**

**Wellbore #2**

**Survey: Survey #1**

## **Standard Survey Report**

**04 April, 2014**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22S-432
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Well:</b>	Alles 22S-432	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	Landmark

<b>Project</b>	SEC.22-T5N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Alles 22S-HZ Pad Sec.22-T5N-R65W				
Site Position:		Northing:	1,383,618.80ft	Latitude:	40.383260
From:	Lat/Long	Easting:	3,239,056.16ft	Longitude:	-104.641860
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Alles 22S-432					
Well Position	+N-S	0.0 ft	Northing:	1,383,673.18 ft	Latitude:	40.383410
	+E-W	0.0 ft	Easting:	3,239,030.56 ft	Longitude:	-104.641950
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,645.0 ft

<b>Wellbore</b>	Wellbore #2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/20/2014	8.42	66.96	52,846

<b>Design</b>	Wellbore #2				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	5,866.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	88.31	

<b>Survey Program</b>	<b>Date</b>	4/2/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
125.0	5,866.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	
6,034.0	12,411.0	Survey #1 (Wellbore #2)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
5,866.0	0.80	256.10	5,813.0	162.1	-681.0	-675.9	0.00	0.00	0.00	
<b>SHL 2151'FSL, 572'FEL, SEC.22</b>										
6,034.0	0.90	241.70	5,981.0	161.2	-683.3	-678.2	0.14	0.06	-8.57	
6,066.0	0.80	229.00	6,013.0	161.0	-683.7	-678.6	0.66	-0.31	-39.69	
6,097.0	0.60	226.60	6,044.0	160.7	-684.0	-678.9	0.65	-0.65	-7.74	
6,129.0	0.10	305.00	6,076.0	160.6	-684.1	-679.1	1.84	-1.56	245.00	
6,160.0	1.10	52.20	6,107.0	160.8	-683.9	-678.8	3.66	3.23	345.81	
6,192.0	3.30	55.20	6,139.0	161.5	-682.9	-677.8	6.88	6.88	9.38	
6,224.0	6.40	59.90	6,170.9	162.9	-680.6	-675.5	9.76	9.69	14.69	
6,255.0	9.90	63.50	6,201.5	165.0	-676.7	-671.5	11.40	11.29	11.61	
6,287.0	13.00	67.50	6,232.9	167.6	-670.9	-665.7	9.99	9.69	12.50	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22S-432
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Well:</b>	Alles 22S-432	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	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)
6,319.0	15.10	70.80	6,263.9	170.3	-663.7	-658.3	7.02	6.56	10.31
6,351.0	16.40	73.70	6,294.7	173.0	-655.4	-650.0	4.75	4.06	9.06
6,382.0	18.50	74.00	6,324.3	175.6	-646.5	-641.0	6.78	6.77	0.97
6,414.0	20.80	73.80	6,354.4	178.5	-636.1	-630.6	7.19	7.19	-0.63
6,446.0	22.30	76.10	6,384.2	181.6	-624.8	-619.1	5.38	4.69	7.19
6,477.0	23.50	80.70	6,412.8	184.0	-613.0	-607.3	6.95	3.87	14.84
6,509.0	25.60	83.00	6,441.9	185.9	-599.8	-594.1	7.21	6.56	7.19
6,541.0	27.70	84.00	6,470.5	187.5	-585.5	-579.8	6.71	6.56	3.13
6,572.0	29.80	85.40	6,497.7	188.9	-570.7	-564.9	7.11	6.77	4.52
6,604.0	31.20	87.40	6,525.2	189.9	-554.5	-548.6	5.40	4.38	6.25
6,635.0	32.30	88.10	6,551.6	190.5	-538.2	-532.3	3.74	3.55	2.26
6,667.0	33.50	89.30	6,578.5	190.9	-520.8	-515.0	4.27	3.75	3.75
6,699.0	34.40	89.70	6,605.0	191.1	-502.9	-497.1	2.90	2.81	1.25
6,731.0	35.60	88.90	6,631.2	191.3	-484.6	-478.7	4.01	3.75	-2.50
6,763.0	36.90	87.70	6,657.0	191.9	-465.7	-459.8	4.63	4.06	-3.75
6,794.0	39.00	85.80	6,681.5	192.9	-446.6	-440.8	7.75	6.77	-6.13
6,826.0	41.80	84.20	6,705.8	194.8	-426.0	-420.1	9.33	8.75	-5.00
6,857.0	44.60	83.10	6,728.4	197.1	-404.9	-398.9	9.35	9.03	-3.55
6,889.0	46.30	83.30	6,750.9	199.8	-382.3	-376.2	5.33	5.31	0.63
6,921.0	48.20	84.20	6,772.6	202.4	-358.9	-352.8	6.29	5.94	2.81
6,952.0	49.70	86.00	6,793.0	204.4	-335.6	-329.4	6.53	4.84	5.81
6,984.0	51.20	87.50	6,813.3	205.8	-311.0	-304.8	5.92	4.69	4.69
7,016.0	52.80	89.10	6,833.0	206.5	-285.8	-279.6	6.37	5.00	5.00
7,048.0	54.30	89.80	6,852.0	206.7	-260.0	-253.8	5.01	4.69	2.19
7,079.0	56.50	89.70	6,869.6	206.9	-234.5	-228.3	7.10	7.10	-0.32
7,111.0	59.50	89.10	6,886.6	207.1	-207.4	-201.2	9.51	9.38	-1.88
7,143.0	62.70	88.60	6,902.1	207.7	-179.4	-173.2	10.09	10.00	-1.56
7,174.0	64.90	88.60	6,915.7	208.4	-151.6	-145.4	7.10	7.10	0.00
7,206.0	66.90	89.10	6,928.8	209.0	-122.4	-116.2	6.41	6.25	1.56
7,238.0	69.50	90.00	6,940.7	209.2	-92.7	-86.5	8.53	8.13	2.81
7,269.0	72.40	90.40	6,950.8	209.1	-63.4	-57.2	9.43	9.35	1.29
7,301.0	75.30	89.10	6,959.7	209.2	-32.6	-26.4	9.87	9.06	-4.06
7,333.0	78.20	88.20	6,967.0	210.0	-1.5	4.7	9.47	9.06	-2.81
7,361.0	80.90	87.50	6,972.1	211.0	26.0	32.2	9.95	9.64	-2.50
7,398.0	84.90	87.95	6,976.7	212.5	62.7	68.9	10.88	10.81	1.22
7,428.0	85.30	88.40	6,979.3	213.4	92.6	98.8	2.00	1.33	1.50
7,435.7	85.35	88.40	6,979.9	213.6	100.2	106.5	0.65	0.65	0.00
Target Sidetrack Casing Pt									
7,459.0	85.50	88.40	6,981.7	214.3	123.5	129.7	0.65	0.65	0.00
7,489.0	85.80	88.20	6,984.0	215.2	153.4	159.6	1.20	1.00	-0.67
7,520.0	85.90	88.20	6,986.3	216.1	184.3	190.6	0.32	0.32	0.00
7,551.0	86.20	88.40	6,988.4	217.1	215.2	221.5	1.16	0.97	0.65
7,581.0	85.90	88.40	6,990.5	217.9	245.1	251.4	1.00	-1.00	0.00
7,611.0	85.40	88.40	6,992.7	218.7	275.0	281.3	1.67	-1.67	0.00
7,642.0	85.40	88.10	6,995.2	219.7	305.9	312.2	0.96	0.00	-0.97
7,673.0	85.60	87.90	6,997.7	220.7	336.8	343.1	0.91	0.65	-0.65
7,703.0	85.80	88.40	6,999.9	221.7	366.7	373.0	1.79	0.67	1.67
7,733.0	86.10	88.90	7,002.0	222.4	396.6	403.0	1.94	1.00	1.67
7,764.0	86.30	89.10	7,004.1	223.0	427.5	433.9	0.91	0.65	0.65
7,794.0	86.80	89.10	7,005.9	223.4	457.4	463.8	1.67	1.67	0.00
7,824.0	87.50	89.80	7,007.4	223.7	487.4	493.8	3.30	2.33	2.33
7,855.0	88.30	90.00	7,008.5	223.8	518.4	524.8	2.66	2.58	0.65
7,885.0	89.40	90.50	7,009.1	223.6	548.4	554.7	4.03	3.67	1.67

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<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Well:</b>	Alles 22S-432	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	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)
7,916.0	90.60	91.10	7,009.1	223.2	579.4	585.7	4.33	3.87	1.94
7,946.0	91.40	91.20	7,008.6	222.6	609.4	615.7	2.69	2.67	0.33
7,976.0	91.80	91.20	7,007.8	222.0	639.3	645.6	1.33	1.33	0.00
8,006.0	91.30	90.70	7,006.9	221.5	669.3	675.6	2.36	-1.67	-1.67
8,036.0	91.20	90.70	7,006.3	221.1	699.3	705.5	0.33	-0.33	0.00
8,067.0	91.40	90.70	7,005.6	220.7	730.3	736.5	0.65	0.65	0.00
8,097.0	91.50	90.70	7,004.8	220.4	760.3	766.5	0.33	0.33	0.00
8,127.0	91.20	90.50	7,004.1	220.1	790.3	796.4	1.20	-1.00	-0.67
8,157.0	91.20	90.50	7,003.5	219.8	820.3	826.4	0.00	0.00	0.00
8,188.0	91.20	90.40	7,002.8	219.5	851.3	857.4	0.32	0.00	-0.32
8,218.0	90.60	90.50	7,002.4	219.3	881.3	887.4	2.03	-2.00	0.33
8,248.0	90.30	90.50	7,002.1	219.1	911.3	917.3	1.00	-1.00	0.00
8,279.0	90.20	90.40	7,002.0	218.8	942.3	948.3	0.46	-0.32	-0.32
8,309.0	90.30	90.40	7,001.9	218.6	972.3	978.3	0.33	0.33	0.00
8,339.0	90.40	90.00	7,001.7	218.5	1,002.3	1,008.3	1.37	0.33	-1.33
8,369.0	90.70	90.40	7,001.4	218.4	1,032.3	1,038.3	1.67	1.00	1.33
8,400.0	90.90	90.20	7,001.0	218.2	1,063.3	1,069.2	0.91	0.65	-0.65
8,429.0	91.30	90.40	7,000.4	218.1	1,092.3	1,098.2	1.54	1.38	0.69
8,460.0	90.70	90.00	6,999.9	218.0	1,123.2	1,129.2	2.33	-1.94	-1.29
8,491.0	90.40	89.70	6,999.6	218.0	1,154.2	1,160.2	1.37	-0.97	-0.97
8,522.0	90.20	89.10	6,999.4	218.4	1,185.2	1,191.2	2.04	-0.65	-1.94
8,552.0	89.80	89.10	6,999.4	218.8	1,215.2	1,221.2	1.33	-1.33	0.00
8,583.0	89.60	90.00	6,999.6	219.1	1,246.2	1,252.2	2.97	-0.65	2.90
8,613.0	89.60	90.20	6,999.8	219.0	1,276.2	1,282.1	0.67	0.00	0.67
8,643.0	89.80	90.20	6,999.9	218.9	1,306.2	1,312.1	0.67	0.67	0.00
8,674.0	90.00	90.50	7,000.0	218.7	1,337.2	1,343.1	1.16	0.65	0.97
8,703.0	90.10	91.10	7,000.0	218.3	1,366.2	1,372.1	2.10	0.34	2.07
8,735.0	90.40	91.60	6,999.8	217.6	1,398.2	1,404.0	1.82	0.94	1.56
8,767.0	90.80	92.10	6,999.5	216.5	1,430.2	1,436.0	2.00	1.25	1.56
8,798.0	90.90	91.90	6,999.0	215.5	1,461.2	1,466.9	0.72	0.32	-0.65
8,830.0	91.00	92.50	6,998.5	214.2	1,493.2	1,498.8	1.90	0.31	1.88
8,862.0	90.90	92.50	6,998.0	212.8	1,525.1	1,530.7	0.31	-0.31	0.00
8,893.0	91.00	92.10	6,997.5	211.6	1,556.1	1,561.7	1.33	0.32	-1.29
8,925.0	91.00	91.90	6,996.9	210.5	1,588.1	1,593.6	0.62	0.00	-0.63
8,957.0	91.40	92.10	6,996.2	209.4	1,620.0	1,625.5	1.40	1.25	0.63
8,988.0	91.50	92.60	6,995.4	208.1	1,651.0	1,656.4	1.64	0.32	1.61
9,020.0	91.60	93.00	6,994.6	206.5	1,683.0	1,688.3	1.29	0.31	1.25
9,052.0	91.90	93.20	6,993.6	204.8	1,714.9	1,720.2	1.13	0.94	0.63
9,084.0	92.00	93.20	6,992.5	203.0	1,746.8	1,752.1	0.31	0.31	0.00
9,115.0	91.80	92.80	6,991.5	201.4	1,777.8	1,782.9	1.44	-0.65	-1.29
9,147.0	91.60	92.10	6,990.5	200.0	1,809.7	1,814.8	2.27	-0.63	-2.19
9,179.0	91.70	91.60	6,989.6	199.0	1,841.7	1,846.8	1.59	0.31	-1.56
9,210.0	91.40	91.10	6,988.8	198.3	1,872.7	1,877.7	1.88	-0.97	-1.61
9,242.0	90.70	90.20	6,988.2	197.9	1,904.7	1,909.7	3.56	-2.19	-2.81
9,274.0	90.30	89.80	6,987.9	197.9	1,936.7	1,941.7	1.77	-1.25	-1.25
9,305.0	90.40	89.50	6,987.7	198.1	1,967.7	1,972.6	1.02	0.32	-0.97
9,337.0	90.50	89.10	6,987.5	198.5	1,999.7	2,004.6	1.29	0.31	-1.25
9,369.0	90.70	88.40	6,987.1	199.2	2,031.6	2,036.6	2.27	0.63	-2.19
9,400.0	91.60	89.80	6,986.5	199.7	2,062.6	2,067.6	5.37	2.90	4.52
9,432.0	92.00	90.00	6,985.5	199.7	2,094.6	2,099.6	1.40	1.25	0.63
9,463.0	91.80	88.40	6,984.5	200.2	2,125.6	2,130.6	5.20	-0.65	-5.16
9,495.0	91.60	86.30	6,983.5	201.6	2,157.6	2,162.6	6.59	-0.63	-6.56
9,526.0	91.70	87.00	6,982.6	203.4	2,188.5	2,193.5	2.28	0.32	2.26

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<b>Well:</b>	Alles 22S-432	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	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)
9,558.0	91.30	86.30	6,981.8	205.3	2,220.4	2,225.5	2.52	-1.25	-2.19
9,590.0	90.70	85.30	6,981.2	207.7	2,252.3	2,257.5	3.64	-1.88	-3.13
9,621.0	90.40	85.60	6,980.9	210.1	2,283.2	2,288.4	1.37	-0.97	0.97
9,653.0	90.70	88.10	6,980.6	211.9	2,315.2	2,320.4	7.87	0.94	7.81
9,685.0	91.10	90.20	6,980.1	212.4	2,347.2	2,352.4	6.68	1.25	6.56
9,717.0	90.60	89.10	6,979.7	212.5	2,379.2	2,384.4	3.78	-1.56	-3.44
9,748.0	90.50	89.80	6,979.4	212.8	2,410.2	2,415.4	2.28	-0.32	2.26
9,780.0	90.80	92.30	6,979.0	212.3	2,442.1	2,447.3	7.87	0.94	7.81
9,812.0	90.20	94.40	6,978.7	210.4	2,474.1	2,479.2	6.82	-1.88	6.56
9,844.0	90.20	96.70	6,978.6	207.3	2,505.9	2,511.0	7.19	0.00	7.19
9,876.0	90.10	98.60	6,978.5	203.0	2,537.7	2,542.5	5.95	-0.31	5.94
9,907.0	90.40	100.20	6,978.4	198.0	2,568.2	2,573.0	5.25	0.97	5.16
9,939.0	89.70	100.90	6,978.4	192.1	2,599.7	2,604.2	3.09	-2.19	2.19
9,970.0	90.30	102.00	6,978.4	186.0	2,630.1	2,634.4	4.04	1.94	3.55
10,002.0	90.60	102.50	6,978.1	179.2	2,661.3	2,665.5	1.82	0.94	1.56
10,034.0	90.70	103.20	6,977.7	172.1	2,692.5	2,696.4	2.21	0.31	2.19
10,066.0	90.70	103.00	6,977.4	164.8	2,723.7	2,727.4	0.62	0.00	-0.63
10,097.0	90.30	103.00	6,977.1	157.8	2,753.9	2,757.4	1.29	-1.29	0.00
10,129.0	90.40	102.80	6,976.9	150.7	2,785.1	2,788.3	0.70	0.31	-0.63
10,161.0	89.80	100.70	6,976.8	144.2	2,816.4	2,819.5	6.83	-1.88	-6.56
10,192.0	89.30	97.60	6,977.1	139.2	2,847.0	2,849.9	10.13	-1.61	-10.00
10,224.0	87.70	94.70	6,977.9	135.8	2,878.8	2,881.6	10.35	-5.00	-9.06
10,256.0	86.60	91.60	6,979.5	134.1	2,910.7	2,913.4	10.27	-3.44	-9.69
10,288.0	86.40	89.70	6,981.5	133.7	2,942.7	2,945.3	5.96	-0.63	-5.94
10,319.0	86.00	87.90	6,983.5	134.3	2,973.6	2,976.3	5.94	-1.29	-5.81
10,351.0	85.80	87.20	6,985.8	135.7	3,005.5	3,008.2	2.27	-0.63	-2.19
10,383.0	86.20	87.40	6,988.0	137.2	3,037.4	3,040.1	1.40	1.25	0.63
10,415.0	86.30	87.70	6,990.1	138.6	3,069.3	3,072.0	0.99	0.31	0.94
10,446.0	86.40	87.50	6,992.1	139.9	3,100.2	3,103.0	0.72	0.32	-0.65
10,478.0	86.80	87.70	6,994.0	141.2	3,132.1	3,134.9	1.40	1.25	0.63
10,510.0	87.50	87.90	6,995.6	142.4	3,164.0	3,166.9	2.27	2.19	0.63
10,541.0	88.50	88.40	6,996.7	143.4	3,195.0	3,197.8	3.61	3.23	1.61
10,573.0	89.80	88.20	6,997.1	144.4	3,227.0	3,229.8	4.11	4.06	-0.63
10,604.0	91.10	88.20	6,996.9	145.4	3,258.0	3,260.8	4.19	4.19	0.00
10,636.0	92.20	88.20	6,996.0	146.4	3,289.9	3,292.8	3.44	3.44	0.00
10,668.0	92.80	88.20	6,994.6	147.4	3,321.9	3,324.8	1.88	1.88	0.00
10,700.0	92.90	87.90	6,993.0	148.5	3,353.8	3,356.8	0.99	0.31	-0.94
10,731.0	93.30	87.90	6,991.3	149.6	3,384.8	3,387.7	1.29	1.29	0.00
10,763.0	93.60	88.10	6,989.4	150.7	3,416.7	3,419.6	1.13	0.94	0.63
10,795.0	93.00	88.40	6,987.6	151.7	3,448.6	3,451.6	2.10	-1.88	0.94
10,827.0	91.80	88.80	6,986.2	152.5	3,480.6	3,483.6	3.95	-3.75	1.25
10,858.0	91.50	89.10	6,985.3	153.0	3,511.6	3,514.6	1.37	-0.97	0.97
10,890.0	91.40	89.70	6,984.5	153.4	3,543.6	3,546.5	1.90	-0.31	1.88
10,922.0	91.30	89.30	6,983.8	153.6	3,575.5	3,578.5	1.29	-0.31	-1.25
10,953.0	91.20	89.50	6,983.1	154.0	3,606.5	3,609.5	0.72	-0.32	0.65
10,985.0	91.20	89.80	6,982.4	154.2	3,638.5	3,641.5	0.94	0.00	0.94
11,017.0	91.20	89.70	6,981.7	154.3	3,670.5	3,673.5	0.31	0.00	-0.31
11,048.0	91.20	89.60	6,981.1	154.5	3,701.5	3,704.5	0.32	0.00	-0.32
11,080.0	91.20	89.60	6,980.4	154.7	3,733.5	3,736.4	0.00	0.00	0.00
11,112.0	91.20	89.80	6,979.7	154.9	3,765.5	3,768.4	0.62	0.00	0.63
11,143.0	91.40	89.50	6,979.0	155.1	3,796.5	3,799.4	1.16	0.65	-0.97
11,175.0	91.30	89.10	6,978.3	155.5	3,828.5	3,831.4	1.29	-0.31	-1.25
11,207.0	90.90	88.60	6,977.7	156.1	3,860.5	3,863.4	2.00	-1.25	-1.56
11,238.0	90.60	88.40	6,977.3	156.9	3,891.5	3,894.4	1.16	-0.97	-0.65

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22S-432
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Well:</b>	Alles 22S-432	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #2	<b>Database:</b>	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)
11,270.0	90.40	87.90	6,977.0	157.9	3,923.4	3,926.4	1.68	-0.63	-1.56
11,302.0	90.40	87.70	6,976.8	159.2	3,955.4	3,958.4	0.62	0.00	-0.63
11,333.0	89.90	87.50	6,976.7	160.5	3,986.4	3,989.4	1.74	-1.61	-0.65
11,365.0	89.70	88.10	6,976.8	161.7	4,018.4	4,021.4	1.98	-0.63	1.88
11,397.0	89.60	88.80	6,977.0	162.6	4,050.3	4,053.4	2.21	-0.31	2.19
11,428.0	90.10	89.50	6,977.1	163.0	4,081.3	4,084.4	2.77	1.61	2.26
11,460.0	90.40	89.50	6,976.9	163.3	4,113.3	4,116.4	0.94	0.94	0.00
11,492.0	90.40	89.30	6,976.7	163.6	4,145.3	4,148.4	0.62	0.00	-0.63
11,524.0	90.20	89.30	6,976.5	164.0	4,177.3	4,180.4	0.63	-0.63	0.00
11,555.0	90.00	88.90	6,976.5	164.5	4,208.3	4,211.4	1.44	-0.65	-1.29
11,587.0	89.90	88.40	6,976.5	165.3	4,240.3	4,243.4	1.59	-0.31	-1.56
11,619.0	90.40	88.60	6,976.4	166.1	4,272.3	4,275.4	1.68	1.56	0.63
11,650.0	90.90	88.20	6,976.1	167.0	4,303.3	4,306.3	2.07	1.61	-1.29
11,682.0	90.80	88.20	6,975.6	168.0	4,335.3	4,338.3	0.31	-0.31	0.00
11,714.0	90.80	88.10	6,975.2	169.0	4,367.3	4,370.3	0.31	0.00	-0.31
11,745.0	91.50	88.10	6,974.5	170.0	4,398.2	4,401.3	2.26	2.26	0.00
11,777.0	91.60	88.10	6,973.7	171.1	4,430.2	4,433.3	0.31	0.31	0.00
11,808.0	91.50	87.90	6,972.8	172.2	4,461.2	4,464.3	0.72	-0.32	-0.65
11,840.0	90.30	88.20	6,972.3	173.3	4,493.2	4,496.3	3.87	-3.75	0.94
11,872.0	89.80	88.40	6,972.3	174.2	4,525.1	4,528.3	1.68	-1.56	0.63
11,903.0	89.60	87.70	6,972.5	175.3	4,556.1	4,559.3	2.35	-0.65	-2.26
11,935.0	89.10	88.80	6,972.8	176.3	4,588.1	4,591.3	3.78	-1.56	3.44
11,967.0	89.30	89.30	6,973.3	176.8	4,620.1	4,623.3	1.68	0.63	1.56
11,998.0	89.50	88.80	6,973.6	177.3	4,651.1	4,654.3	1.74	0.65	-1.61
12,030.0	90.10	89.50	6,973.7	177.8	4,683.1	4,686.3	2.88	1.88	2.19
12,062.0	90.60	89.50	6,973.5	178.1	4,715.1	4,718.3	1.56	1.56	0.00
12,093.0	91.50	90.00	6,972.9	178.2	4,746.1	4,749.3	3.32	2.90	1.61
12,125.0	91.50	90.70	6,972.1	178.0	4,778.1	4,781.2	2.19	0.00	2.19
12,156.0	91.50	91.10	6,971.3	177.5	4,809.0	4,812.2	1.29	0.00	1.29
12,188.0	92.20	92.30	6,970.3	176.6	4,841.0	4,844.1	4.34	2.19	3.75
12,220.0	92.60	92.30	6,968.9	175.3	4,873.0	4,876.0	1.25	1.25	0.00
12,252.0	92.70	92.10	6,967.4	174.0	4,904.9	4,907.9	0.70	0.31	-0.63
12,283.0	92.70	91.80	6,966.0	173.0	4,935.9	4,938.8	0.97	0.00	-0.97
12,315.0	93.00	91.80	6,964.4	172.0	4,967.8	4,970.7	0.94	0.94	0.00
12,347.0	93.00	91.60	6,962.7	171.0	4,999.7	5,002.6	0.62	0.00	-0.63
12,379.0	91.70	91.80	6,961.4	170.1	5,031.7	5,034.5	4.11	-4.06	0.63
12,411.0	91.40	92.50	6,960.5	168.9	5,063.7	5,066.4	2.38	-0.94	2.19
BHL 2326'FSL, 500'FEL, SEC.23									

Checked By: _____	Approved By: _____	Date: _____
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