

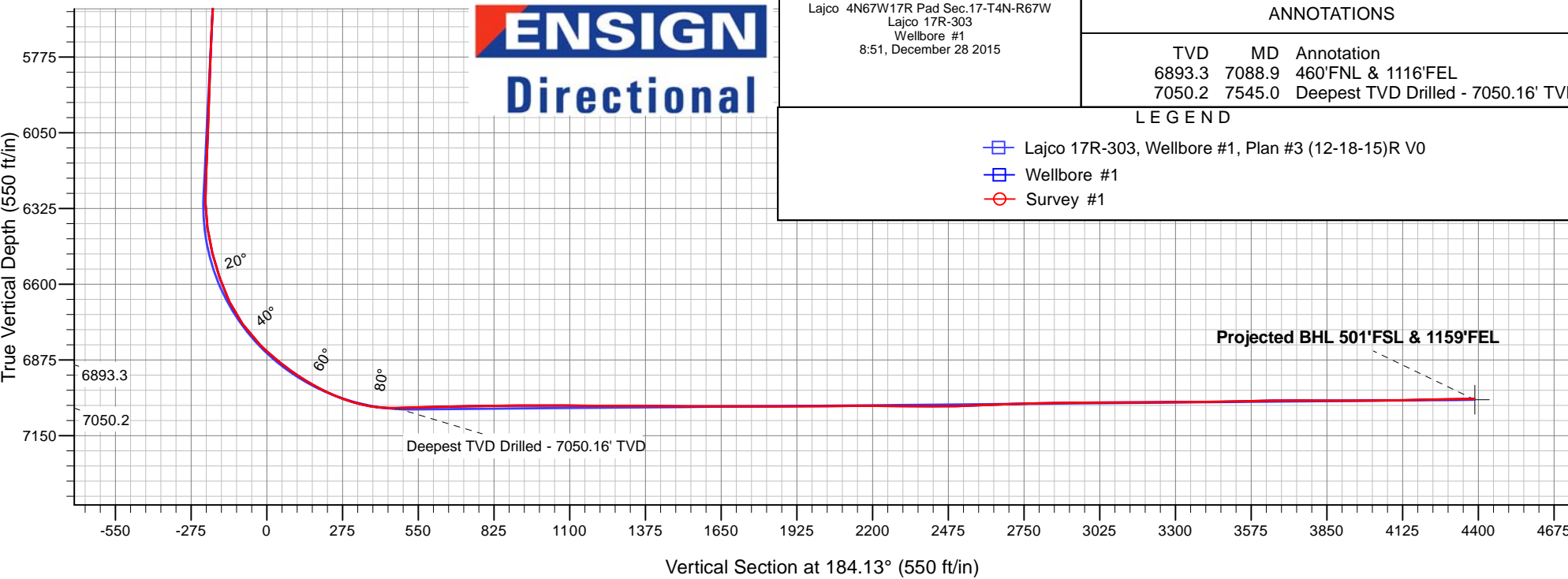
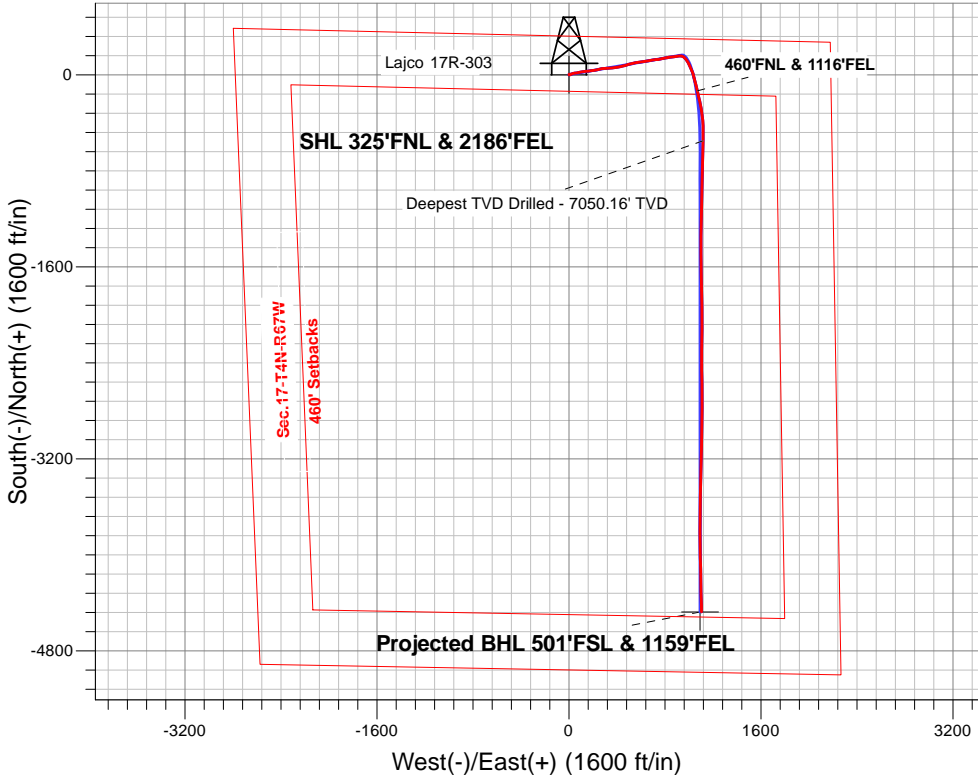
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Lajco 17R-303**

Surface Location: Lajco 4N67W17R Pad Sec.17-T4N-R67W  
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
Ground Elevation: 4794.0  
+N/-S+E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0359727.63 3163452.97 40.319370 -104.913810  
RKB - 13' WELL @ 4807.0ft (RKB - 13')

FINAL SURVEY

Projected Bottom Hole Location  
11472'MD 7017'TVD 4476'S & 1104'E of SHL  
90.3 degree Incl @ 179.0 degree AZM





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.17-T4N-R67W**

**Lajco 4N67W17R Pad Sec.17-T4N-R67W**

**Lajco 17R-303**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**28 December, 2015**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Lajco 17R-303
<b>Project:</b>	SEC.17-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Site:</b>	Lajco 4N67W17R Pad Sec.17-T4N-R67W	<b>MD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Well:</b>	Lajco 17R-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.17-T4N-R67W, 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	Lajco 4N67W17R Pad Sec.17-T4N-R67W				
Site Position:		Northing:	1,359,711.77 usft	Latitude:	40.319300
From:	Lat/Long	Easting:	3,164,903.08 usft	Longitude:	-104.908610
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	Lajco 17R-303					
Well Position	+N/-S	0.0 ft	Northing:	1,359,727.63 usft	Latitude:	40.319370
	+E/-W	0.0 ft	Easting:	3,163,452.97 usft	Longitude:	-104.913810
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,794.0 ft

<b>Wellbore</b>	Wellbore #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	12/18/2015	8.33	66.81	52,599

<b>Design</b>	Wellbore #1				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	184.13	

<b>Survey Program</b>	<b>Date</b>	12/28/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
138.0	11,472.0	Survey #1 (Wellbore #1)	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 (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.01	25.40	1.0	0.0	0.0	0.0	0.51	0.51	0.00	
<b>SHL 325'FNL &amp; 2186'FEL</b>										
138.0	0.70	25.40	138.0	0.8	0.4	-0.8	0.51	0.51	0.00	
234.0	0.60	2.70	234.0	1.8	0.6	-1.8	0.29	-0.10	-23.65	
330.0	1.00	42.10	330.0	2.9	1.2	-3.0	0.69	0.42	41.04	
426.0	1.40	67.90	426.0	4.0	2.9	-4.2	0.69	0.42	26.88	
522.0	1.10	112.60	521.9	4.1	4.8	-4.4	1.03	-0.31	46.56	
617.0	0.90	113.30	616.9	3.4	6.3	-3.9	0.21	-0.21	0.74	
713.0	0.70	126.30	712.9	2.8	7.5	-3.3	0.28	-0.21	13.54	
809.0	0.50	136.10	808.9	2.1	8.3	-2.7	0.23	-0.21	10.21	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Lajco 17R-303
<b>Project:</b>	SEC.17-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Site:</b>	Lajco 4N67W17R Pad Sec.17-T4N-R67W	<b>MD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Well:</b>	Lajco 17R-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
905.0	0.60	204.00	904.9	1.4	8.3	-2.0	0.65	0.10	70.73
1,001.0	0.70	217.90	1,000.9	0.4	7.8	-1.0	0.19	0.10	14.48
1,097.0	0.70	88.10	1,096.9	0.0	8.0	-0.6	1.32	0.00	-135.21
1,170.0	1.80	67.00	1,169.9	0.5	9.5	-1.1	1.61	1.51	-28.90
1,319.0	1.80	47.20	1,318.8	3.0	13.4	-3.9	0.42	0.00	-13.29
1,415.0	3.60	68.60	1,414.7	5.1	17.3	-6.3	2.12	1.88	22.29
1,511.0	4.60	71.30	1,510.5	7.4	23.7	-9.1	1.06	1.04	2.81
1,607.0	5.50	73.20	1,606.1	10.0	31.8	-12.3	0.95	0.94	1.98
1,703.0	6.40	79.70	1,701.6	12.3	41.5	-15.2	1.17	0.94	6.77
1,798.0	7.80	84.40	1,795.8	13.9	53.1	-17.6	1.59	1.47	4.95
1,894.0	9.50	81.80	1,890.7	15.6	67.4	-20.4	1.82	1.77	-2.71
1,990.0	10.50	78.30	1,985.3	18.5	83.8	-24.5	1.22	1.04	-3.65
2,086.0	9.80	77.90	2,079.8	22.0	100.4	-29.2	0.73	-0.73	-0.42
2,181.0	12.00	79.70	2,173.1	25.5	118.0	-33.9	2.34	2.32	1.89
2,277.0	11.60	84.10	2,267.0	28.2	137.4	-38.1	1.03	-0.42	4.58
2,373.0	14.20	85.10	2,360.6	30.2	158.8	-41.6	2.72	2.71	1.04
2,469.0	14.50	83.70	2,453.6	32.6	182.4	-45.6	0.48	0.31	-1.46
2,564.0	14.00	80.20	2,545.7	35.8	205.6	-50.5	1.05	-0.53	-3.68
2,661.0	12.70	79.00	2,640.1	39.9	227.6	-56.2	1.37	-1.34	-1.24
2,758.0	11.60	75.00	2,734.9	44.4	247.5	-62.1	1.43	-1.13	-4.12
2,852.0	11.10	80.00	2,827.0	48.4	265.5	-67.4	1.17	-0.53	5.32
2,948.0	10.20	85.50	2,921.4	50.7	283.1	-71.0	1.41	-0.94	5.73
3,044.0	8.50	83.00	3,016.1	52.2	298.6	-73.6	1.82	-1.77	-2.60
3,140.0	9.60	82.20	3,110.9	54.2	313.6	-76.6	1.15	1.15	-0.83
3,236.0	10.50	89.50	3,205.5	55.4	330.3	-79.0	1.62	0.94	7.60
3,331.0	10.90	86.60	3,298.8	56.0	347.9	-80.9	0.71	0.42	-3.05
3,427.0	12.80	85.10	3,392.8	57.4	367.6	-83.7	2.00	1.98	-1.56
3,523.0	11.50	79.70	3,486.6	60.0	387.6	-87.8	1.80	-1.35	-5.63
3,619.0	11.30	78.30	3,580.7	63.6	406.2	-92.7	0.36	-0.21	-1.46
3,714.0	10.90	79.50	3,673.9	67.2	424.1	-97.5	0.49	-0.42	1.26
3,810.0	10.20	75.50	3,768.3	71.0	441.3	-102.6	1.05	-0.73	-4.17
3,906.0	10.60	78.50	3,862.7	74.8	458.2	-107.6	0.70	0.42	3.13
4,001.0	10.00	73.40	3,956.2	78.9	474.7	-112.9	1.15	-0.63	-5.37
4,097.0	10.50	75.00	4,050.7	83.6	491.1	-118.7	0.60	0.52	1.67
4,193.0	11.40	70.40	4,144.9	89.0	508.5	-125.4	1.31	0.94	-4.79
4,287.0	11.40	76.70	4,237.1	94.3	526.3	-131.9	1.32	0.00	6.70
4,383.0	12.50	76.50	4,331.0	98.9	545.6	-137.9	1.15	1.15	-0.21
4,478.0	12.80	83.60	4,423.7	102.5	566.1	-143.0	1.67	0.32	7.47
4,574.0	11.00	82.90	4,517.6	104.8	585.7	-146.7	1.88	-1.88	-0.73
4,670.0	12.10	82.30	4,611.7	107.3	604.8	-150.5	1.15	1.15	-0.63
4,766.0	10.90	79.90	4,705.7	110.2	623.7	-154.8	1.35	-1.25	-2.50
4,862.0	11.10	81.10	4,800.0	113.2	641.8	-159.2	0.32	0.21	1.25
4,958.0	11.40	79.70	4,894.1	116.4	660.2	-163.6	0.42	0.31	-1.46

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<b>Site:</b>	Lajco 4N67W17R Pad Sec.17-T4N-R67W	<b>MD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Well:</b>	Lajco 17R-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,054.0	12.40	82.70	4,988.1	119.4	679.8	-168.0	1.22	1.04	3.13
5,150.0	10.40	79.50	5,082.2	122.3	698.5	-172.2	2.18	-2.08	-3.33
5,246.0	11.50	80.20	5,176.4	125.5	716.5	-176.7	1.15	1.15	0.73
5,342.0	11.10	87.60	5,270.6	127.5	735.1	-180.1	1.57	-0.42	7.71
5,437.0	12.00	80.80	5,363.7	129.4	754.0	-183.4	1.72	0.95	-7.16
5,533.0	11.40	77.90	5,457.7	133.0	773.2	-188.4	0.87	-0.63	-3.02
5,629.0	12.80	77.20	5,551.5	137.4	792.8	-194.1	1.47	1.46	-0.73
5,724.0	12.00	82.00	5,644.3	141.1	812.8	-199.2	1.37	-0.84	5.05
5,820.0	9.10	75.70	5,738.7	144.3	830.1	-203.7	3.25	-3.02	-6.56
5,915.0	9.50	86.70	5,832.4	146.6	845.2	-207.1	1.91	0.42	11.58
6,011.0	10.40	80.40	5,927.0	148.5	861.6	-210.2	1.47	0.94	-6.56
6,107.0	11.30	83.60	6,021.3	151.0	879.5	-214.0	1.13	0.94	3.33
6,203.0	11.60	84.40	6,115.4	153.0	898.5	-217.3	0.35	0.31	0.83
6,298.0	11.70	80.60	6,208.4	155.5	917.5	-221.2	0.81	0.11	-4.00
6,394.0	11.80	93.90	6,302.4	156.5	936.9	-223.5	2.82	0.10	13.85
6,490.0	15.80	128.70	6,395.8	147.6	956.9	-216.1	9.41	4.17	36.25
6,586.0	18.10	140.70	6,487.6	127.9	976.6	-197.9	4.35	2.40	12.50
6,681.0	22.20	152.80	6,576.8	100.5	994.2	-171.8	6.13	4.32	12.74
6,777.0	28.10	155.50	6,663.7	63.7	1,011.8	-136.4	6.26	6.15	2.81
6,874.0	38.30	160.40	6,744.8	14.5	1,031.4	-88.7	10.87	10.52	5.05
6,970.0	45.40	167.80	6,816.3	-47.1	1,048.7	-28.6	9.00	7.40	7.71
7,065.0	52.10	165.70	6,878.9	-116.5	1,065.1	39.5	7.25	7.05	-2.21
7,088.9	53.67	166.10	6,893.3	-135.0	1,069.8	57.6	6.69	6.56	1.66
<b>460°FNL &amp; 1116°FEL</b>									
7,161.0	58.40	167.20	6,933.6	-193.2	1,083.5	114.6	6.69	6.56	1.53
7,257.0	63.50	169.30	6,980.2	-275.3	1,100.6	195.3	5.65	5.31	2.19
7,353.0	69.60	174.10	7,018.4	-362.4	1,113.2	281.3	7.83	6.35	5.00
7,449.0	80.50	179.50	7,043.1	-454.8	1,118.3	373.1	12.58	11.35	5.63
7,545.0	91.10	180.10	7,050.2	-550.4	1,118.6	468.4	11.06	11.04	0.63
<b>Deepest TVD Drilled - 7050.16' TVD</b>									
7,601.8	91.69	180.93	7,048.8	-607.2	1,118.1	525.1	1.79	1.04	1.46
<b>LPL (17R-303)</b>									
7,641.0	92.10	181.50	7,047.5	-646.4	1,117.3	564.2	1.79	1.04	1.46
7,736.0	91.00	182.20	7,044.9	-741.3	1,114.2	659.1	1.37	-1.16	0.74
7,832.0	91.50	181.50	7,042.8	-837.2	1,111.1	755.0	0.90	0.52	-0.73
7,957.0	90.20	180.90	7,041.0	-962.2	1,108.5	879.8	1.15	-1.04	-0.48
8,053.0	90.10	181.70	7,040.7	-1,058.1	1,106.3	975.7	0.84	-0.10	0.83
8,148.0	89.30	180.80	7,041.2	-1,153.1	1,104.2	1,070.6	1.27	-0.84	-0.95
8,244.0	89.80	180.90	7,042.0	-1,249.1	1,102.8	1,166.4	0.53	0.52	0.10
8,340.0	89.70	181.10	7,042.4	-1,345.1	1,101.1	1,262.3	0.23	-0.10	0.21
8,435.0	90.20	180.10	7,042.5	-1,440.1	1,100.1	1,357.1	1.18	0.53	-1.05
8,532.0	89.30	178.80	7,042.9	-1,537.1	1,101.1	1,453.8	1.63	-0.93	-1.34
8,627.0	89.80	179.00	7,043.6	-1,632.1	1,102.9	1,548.4	0.57	0.53	0.21
8,723.0	89.50	179.20	7,044.2	-1,728.0	1,104.4	1,644.0	0.38	-0.31	0.21

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<b>Site:</b>	Lajco 4N67W17R Pad Sec.17-T4N-R67W	<b>MD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Well:</b>	Lajco 17R-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,819.0	90.60	178.70	7,044.1	-1,824.0	1,106.1	1,739.6	1.26	1.15	-0.52
8,915.0	90.10	178.70	7,043.6	-1,920.0	1,108.3	1,835.2	0.52	-0.52	0.00
9,011.0	90.20	180.60	7,043.3	-2,016.0	1,108.9	1,930.9	1.98	0.10	1.98
9,106.0	90.00	180.60	7,043.1	-2,111.0	1,107.9	2,025.7	0.21	-0.21	0.00
9,202.0	90.60	180.90	7,042.6	-2,207.0	1,106.7	2,121.5	0.70	0.63	0.31
9,298.0	89.50	179.70	7,042.5	-2,303.0	1,106.2	2,217.3	1.70	-1.15	-1.25
9,394.0	90.10	180.90	7,042.9	-2,399.0	1,105.7	2,313.1	1.40	0.63	1.25
9,490.0	89.40	178.80	7,043.3	-2,495.0	1,105.9	2,408.8	2.31	-0.73	-2.19
9,585.0	91.30	178.30	7,042.7	-2,589.9	1,108.3	2,503.4	2.07	2.00	-0.53
9,681.0	92.50	180.40	7,039.5	-2,685.9	1,109.4	2,599.0	2.52	1.25	2.19
9,777.0	92.00	179.90	7,035.8	-2,781.8	1,109.1	2,694.7	0.74	-0.52	-0.52
9,873.0	91.40	180.90	7,032.9	-2,877.7	1,108.5	2,790.4	1.21	-0.63	1.04
9,969.0	90.60	181.10	7,031.2	-2,973.7	1,106.8	2,886.3	0.86	-0.83	0.21
10,065.0	90.50	180.90	7,030.3	-3,069.7	1,105.1	2,982.1	0.23	-0.10	-0.21
10,161.0	90.30	181.10	7,029.7	-3,165.7	1,103.5	3,078.0	0.29	-0.21	0.21
10,257.0	90.40	181.50	7,029.1	-3,261.6	1,101.3	3,173.9	0.43	0.10	0.42
10,352.0	90.00	181.80	7,028.7	-3,356.6	1,098.5	3,268.8	0.53	-0.42	0.32
10,448.0	90.90	181.70	7,028.0	-3,452.6	1,095.6	3,364.7	0.94	0.94	-0.10
10,543.0	90.10	180.80	7,027.2	-3,547.5	1,093.5	3,459.6	1.27	-0.84	-0.95
10,639.0	91.80	179.90	7,025.6	-3,643.5	1,092.9	3,555.3	2.00	1.77	-0.94
10,735.0	91.20	180.60	7,023.0	-3,739.5	1,092.5	3,651.1	0.96	-0.63	0.73
10,830.0	89.50	179.20	7,022.5	-3,834.5	1,092.7	3,745.8	2.32	-1.79	-1.47
10,925.0	89.60	178.50	7,023.2	-3,929.4	1,094.6	3,840.4	0.74	0.11	-0.74
11,021.0	90.30	179.20	7,023.3	-4,025.4	1,096.5	3,936.0	1.03	0.73	0.73
11,117.0	90.80	178.80	7,022.4	-4,121.4	1,098.2	4,031.6	0.67	0.52	-0.42
11,213.0	90.60	179.40	7,021.2	-4,217.4	1,099.7	4,127.2	0.66	-0.21	0.63
11,309.0	91.60	178.70	7,019.4	-4,313.4	1,101.3	4,222.8	1.27	1.04	-0.73
11,421.0	90.30	179.00	7,017.5	-4,425.3	1,103.6	4,334.3	1.19	-1.16	0.27
11,472.0	90.30	179.00	7,017.2	-4,476.3	1,104.4	4,385.1	0.00	0.00	0.00
BHL 500'FSL & 1170'FEL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 325'FNL & 2186'FE	0.00	0.00	1.0	0.0	0.0	1,359,727.64	3,163,452.97	40.319370	-104.913810
- hit/miss target									
- Shape									
- survey hits target center									
- Point									
BHL 500'FSL & 1170'FEI	0.00	0.00	7,020.0	-4,477.3	1,093.3	1,355,257.86	3,164,575.80	40.307080	-104.909890
- survey misses target center by 11.5ft at 11472.0ft MD (7017.2 TVD, -4476.3 N, 1104.4 E)									
- Point									

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Lajco 17R-303
<b>Project:</b>	SEC.17-T4N-R67W	<b>TVD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Site:</b>	Lajco 4N67W17R Pad Sec.17-T4N-R67W	<b>MD Reference:</b>	WELL @ 4807.0ft (RKB - 13')
<b>Well:</b>	Lajco 17R-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	US_EDM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,088.9	6,893.3	-135.0	1,069.8	460'FNL & 1116'FEL
7,545.0	7,050.2	-550.4	1,118.6	Deepest TVD Drilled - 7050.16' TVD

Checked By: _____	Approved By: _____	Date: _____
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