

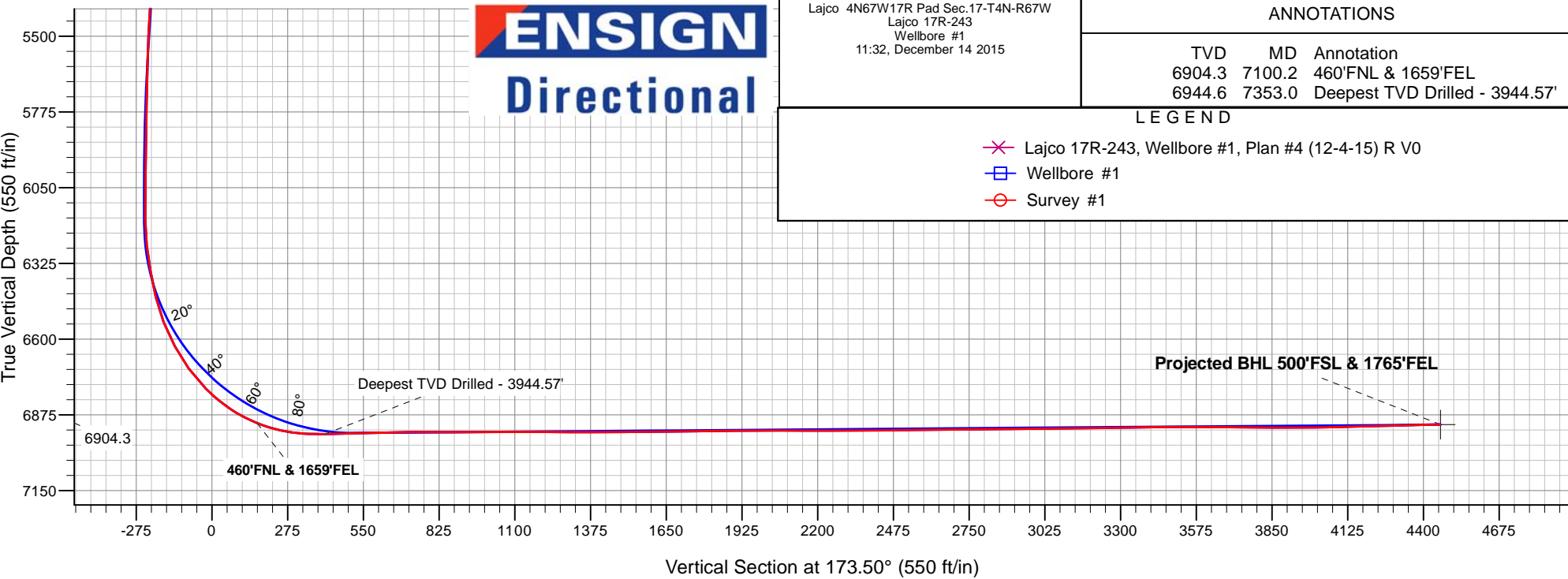
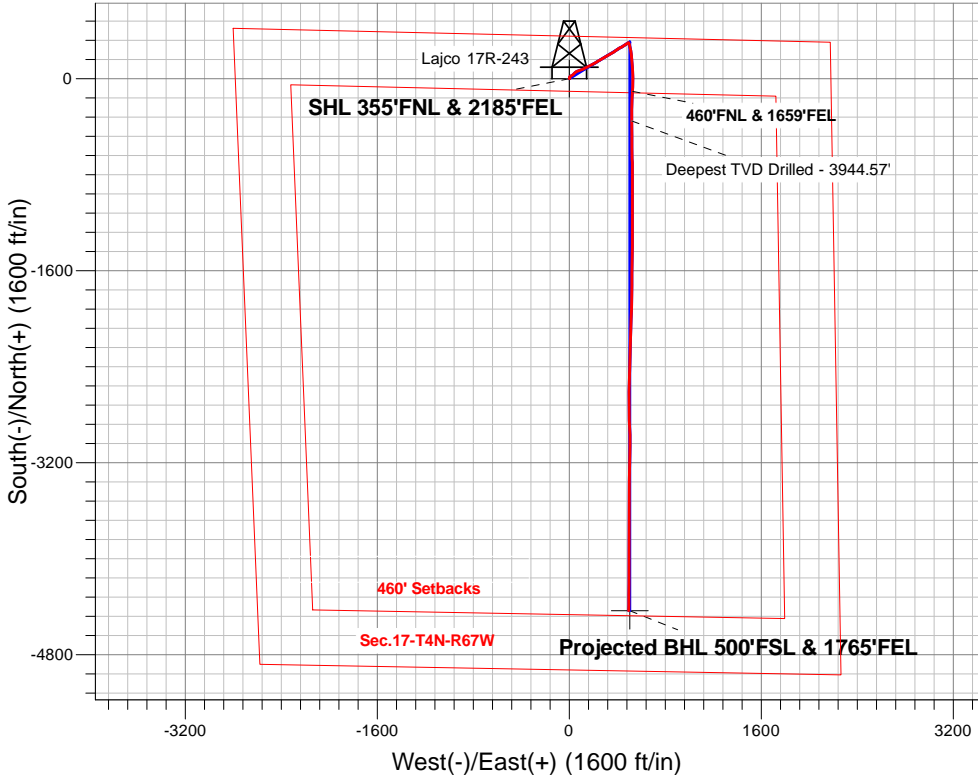
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Lajco 17R-243**

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 0.0359694.86 3163455.97 40.319280 -104.913800
RKB - 13' WELL @ 4807.0ft (RKB - 13')

FINAL SURVEY

Projected Bottom Hole Location
11435'MD 6909'TVD 4434'S & 496'E of SHL
91.5 degree Incl @ 180.6 degree AZM



Lajco 4N67W17R Pad Sec.17-T4N-R67W
Lajco 17R-243
Wellbore #1
11:32, December 14 2015

ANNOTATIONS

TVD	MD	Annotation
6904.3	7100.2	460'FNL & 1659'FEL
6944.6	7353.0	Deepest TVD Drilled - 3944.57'

LEGEND

- Lajco 17R-243, Wellbore #1, Plan #4 (12-4-15) R V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.17-T4N-R67W

Lajco 4N67W17R Pad Sec.17-T4N-R67W

Lajco 17R-243

Wellbore #1

Survey: Survey #1

Standard Survey Report

14 December, 2015

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17R-243
Project:	SEC.17-T4N-R67W	TVD Reference:	WELL @ 4807.0ft (RKB - 13')
Site:	Lajco 4N67W17R Pad Sec.17-T4N-R67W	MD Reference:	WELL @ 4807.0ft (RKB - 13')
Well:	Lajco 17R-243	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Project	SEC.17-T4N-R67W, Weld County, Colorado		
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		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-243					
Well Position	+N-S	0.0 ft	Northing:	1,359,694.86 usft	Latitude:	40.319280
	+E-W	0.0 ft	Easting:	3,163,455.97 usft	Longitude:	-104.913800
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,794.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/4/2015	8.33	66.81	52,603

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	173.50	

Survey Program	Date	12/14/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
168.0	11,435.0	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
5.0	0.02	344.30	5.0	0.0	0.0	0.0	0.36	0.36	0.00	
SHL 355'FNL & 2185'FEL										
168.0	0.60	344.30	168.0	0.8	-0.2	-0.9	0.36	0.36	0.00	
264.0	0.90	49.50	264.0	1.8	0.2	-1.8	0.88	0.31	67.92	
360.0	1.10	56.90	360.0	2.8	1.5	-2.6	0.25	0.21	7.71	
455.0	1.10	55.80	455.0	3.8	3.1	-3.5	0.02	0.00	-1.16	
551.0	0.50	55.60	550.9	4.6	4.2	-4.1	0.63	-0.63	-0.21	
647.0	0.30	33.30	646.9	5.0	4.7	-4.5	0.26	-0.21	-23.23	
743.0	0.40	344.10	742.9	5.6	4.7	-5.0	0.32	0.10	-51.25	
839.0	0.40	310.10	838.9	6.1	4.4	-5.6	0.24	0.00	-35.42	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17R-243
Project:	SEC.17-T4N-R67W	TVD Reference:	WELL @ 4807.0ft (RKB - 13')
Site:	Lajco 4N67W17R Pad Sec.17-T4N-R67W	MD Reference:	WELL @ 4807.0ft (RKB - 13')
Well:	Lajco 17R-243	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
935.0	0.60	310.50	934.9	6.6	3.7	-6.2	0.21	0.21	0.42
1,030.0	0.50	333.90	1,029.9	7.3	3.2	-6.9	0.26	-0.11	24.63
1,126.0	0.30	219.50	1,125.9	7.5	2.8	-7.1	0.71	-0.21	-119.17
1,176.0	0.10	274.50	1,175.9	7.4	2.7	-7.1	0.51	-0.40	110.00
1,319.0	0.40	316.10	1,318.9	7.8	2.2	-7.5	0.23	0.21	29.09
1,415.0	1.10	323.90	1,414.9	8.8	1.4	-8.6	0.74	0.73	8.13
1,511.0	1.80	24.20	1,510.9	10.9	1.5	-10.7	1.64	0.73	62.81
1,607.0	3.30	38.20	1,606.8	14.4	3.8	-13.9	1.68	1.56	14.58
1,703.0	3.90	51.20	1,702.6	18.7	8.1	-17.6	1.05	0.63	13.54
1,799.0	5.10	62.30	1,798.3	22.7	14.4	-20.9	1.54	1.25	11.56
1,894.0	5.70	61.30	1,892.9	26.9	22.3	-24.2	0.64	0.63	-1.05
1,990.0	6.20	47.20	1,988.4	32.7	30.3	-29.1	1.60	0.52	-14.69
2,086.0	6.10	41.60	2,083.8	40.1	37.5	-35.6	0.63	-0.10	-5.83
2,181.0	6.20	47.40	2,178.3	47.3	44.6	-42.0	0.66	0.11	6.11
2,277.0	6.60	51.90	2,273.7	54.2	52.8	-47.9	0.67	0.42	4.69
2,373.0	8.20	66.30	2,368.9	60.4	63.4	-52.8	2.54	1.67	15.00
2,469.0	9.40	74.60	2,463.8	65.2	77.2	-56.1	1.82	1.25	8.65
2,565.0	8.40	73.20	2,558.6	69.3	91.5	-58.5	1.07	-1.04	-1.46
2,661.0	8.50	66.90	2,653.6	74.1	104.7	-61.8	0.97	0.10	-6.56
2,757.0	9.30	62.30	2,748.4	80.5	118.1	-66.6	1.11	0.83	-4.79
2,853.0	7.70	57.00	2,843.4	87.6	130.4	-72.3	1.85	-1.67	-5.52
2,949.0	8.30	62.00	2,938.4	94.4	141.9	-77.7	0.96	0.63	5.21
3,044.0	8.40	66.90	3,032.4	100.3	154.3	-82.2	0.76	0.11	5.16
3,140.0	7.80	66.30	3,127.5	105.7	166.7	-86.2	0.63	-0.63	-0.63
3,236.0	8.30	68.50	3,222.5	110.9	179.1	-89.9	0.61	0.52	2.29
3,332.0	8.90	60.20	3,317.4	117.1	192.0	-94.6	1.43	0.63	-8.65
3,427.0	8.80	57.60	3,411.3	124.6	204.5	-100.7	0.43	-0.11	-2.74
3,523.0	8.40	61.60	3,506.2	131.9	216.9	-106.5	0.75	-0.42	4.17
3,619.0	9.60	59.10	3,601.0	139.3	229.9	-112.4	1.31	1.25	-2.60
3,714.0	9.10	55.30	3,694.8	147.7	242.9	-119.3	0.84	-0.53	-4.00
3,810.0	9.80	62.10	3,789.5	155.8	256.4	-125.8	1.37	0.73	7.08
3,906.0	7.30	55.40	3,884.4	163.1	268.6	-131.7	2.80	-2.60	-6.98
4,002.0	7.20	59.10	3,979.6	169.7	278.8	-137.0	0.50	-0.10	3.85
4,097.0	8.60	59.10	4,073.7	176.4	290.0	-142.4	1.47	1.47	0.00
4,193.0	9.10	58.60	4,168.6	184.0	302.6	-148.6	0.53	0.52	-0.52
4,288.0	9.40	64.10	4,262.4	191.3	316.0	-154.3	0.98	0.32	5.79
4,383.0	7.30	64.80	4,356.3	197.3	328.5	-158.9	2.21	-2.21	0.74
4,479.0	8.40	62.50	4,451.4	203.1	340.2	-163.3	1.19	1.15	-2.40
4,574.0	8.80	57.20	4,545.4	210.3	352.5	-169.0	0.93	0.42	-5.58
4,671.0	10.20	56.70	4,641.0	219.0	365.9	-176.2	1.45	1.44	-0.52
4,767.0	8.30	52.80	4,735.8	227.9	378.5	-183.6	2.08	-1.98	-4.06
4,862.0	8.30	54.20	4,829.8	236.0	389.5	-190.4	0.21	0.00	1.47
4,958.0	7.60	57.90	4,924.9	243.4	400.5	-196.6	0.90	-0.73	3.85

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17R-243
Project:	SEC.17-T4N-R67W	TVD Reference:	WELL @ 4807.0ft (RKB - 13')
Site:	Lajco 4N67W17R Pad Sec.17-T4N-R67W	MD Reference:	WELL @ 4807.0ft (RKB - 13')
Well:	Lajco 17R-243	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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	9.10	60.20	5,019.9	250.6	412.5	-202.3	1.60	1.56	2.40
5,150.0	8.20	60.70	5,114.8	257.7	425.1	-208.0	0.94	-0.94	0.52
5,246.0	8.90	62.30	5,209.7	264.5	437.6	-213.3	0.77	0.73	1.67
5,342.0	7.90	57.70	5,304.7	271.5	449.8	-218.9	1.25	-1.04	-4.79
5,438.0	7.20	53.50	5,399.8	278.6	460.2	-224.7	0.93	-0.73	-4.38
5,534.0	6.20	53.00	5,495.2	285.3	469.2	-230.4	1.04	-1.04	-0.52
5,629.0	4.80	66.90	5,589.7	289.9	476.9	-234.1	2.02	-1.47	14.63
5,725.0	4.00	72.00	5,685.5	292.6	483.8	-235.9	0.93	-0.83	5.31
5,820.0	2.60	57.70	5,780.3	294.7	488.8	-237.5	1.70	-1.47	-15.05
5,916.0	1.60	39.80	5,876.2	296.9	491.5	-239.4	1.23	-1.04	-18.65
6,011.0	1.00	39.30	5,971.2	298.6	492.8	-240.9	0.63	-0.63	-0.53
6,107.0	0.60	25.40	6,067.2	299.7	493.6	-241.9	0.46	-0.42	-14.48
6,203.0	0.10	285.00	6,163.2	300.2	493.7	-242.4	0.65	-0.52	-104.58
6,299.0	7.20	156.70	6,259.0	294.6	496.0	-236.6	7.57	7.40	-133.65
6,394.0	9.70	162.10	6,352.9	281.6	500.8	-223.1	2.76	2.63	5.68
6,490.0	13.70	166.20	6,446.9	262.8	506.0	-203.9	4.25	4.17	4.27
6,586.0	21.50	170.10	6,538.3	234.4	511.8	-175.0	8.21	8.13	4.06
6,682.0	28.10	173.90	6,625.4	194.5	517.2	-134.8	7.07	6.88	3.96
6,777.0	36.10	174.10	6,705.9	144.4	522.5	-84.3	8.42	8.42	0.21
6,874.0	44.80	176.70	6,779.6	81.7	527.4	-21.5	9.13	8.97	2.68
6,970.0	54.10	179.70	6,842.0	8.9	529.5	51.1	9.97	9.69	3.13
7,065.0	64.70	182.40	6,890.3	-72.7	527.9	132.0	11.42	11.16	2.84
7,100.2	68.22	182.59	6,904.3	-105.0	526.5	163.9	10.01	10.00	0.54
460'FNL & 1659'FEL									
7,161.0	74.30	182.90	6,923.8	-162.5	523.8	220.7	10.01	10.00	0.51
7,257.0	84.90	180.40	6,941.1	-256.7	521.1	314.0	11.33	11.04	-2.60
7,353.0	91.00	179.70	6,944.6	-352.6	521.0	409.3	6.40	6.35	-0.73
Deepest TVD Drilled - 3944.57'									
7,478.0	91.70	179.90	6,941.6	-477.6	521.5	533.5	0.58	0.56	0.16
7,574.0	91.30	179.00	6,939.1	-573.5	522.4	628.9	1.03	-0.42	-0.94
7,670.0	91.00	178.80	6,937.2	-669.5	524.2	724.5	0.38	-0.31	-0.21
7,766.0	89.30	179.90	6,936.9	-765.5	525.3	820.0	2.11	-1.77	1.15
7,861.0	90.00	180.30	6,937.5	-860.5	525.1	914.3	0.85	0.74	0.42
7,957.0	90.70	178.80	6,936.9	-956.5	525.9	1,009.8	1.72	0.73	-1.56
8,052.0	89.70	180.80	6,936.6	-1,051.4	526.2	1,104.2	2.35	-1.05	2.11
8,148.0	90.20	180.10	6,936.7	-1,147.4	525.5	1,199.5	0.90	0.52	-0.73
8,244.0	89.00	179.90	6,937.4	-1,243.4	525.5	1,294.9	1.27	-1.25	-0.21
8,340.0	90.60	179.40	6,937.7	-1,339.4	526.1	1,390.3	1.75	1.67	-0.52
8,436.0	90.20	181.00	6,937.0	-1,435.4	525.7	1,485.7	1.72	-0.42	1.67
8,532.0	90.70	180.80	6,936.3	-1,531.4	524.2	1,580.9	0.56	0.52	-0.21
8,628.0	90.70	180.80	6,935.1	-1,627.4	522.9	1,676.1	0.00	0.00	0.00
8,723.0	90.80	180.80	6,933.8	-1,722.4	521.5	1,770.3	0.11	0.11	0.00
8,819.0	90.90	180.30	6,932.4	-1,818.4	520.6	1,865.6	0.53	0.10	-0.52
8,915.0	89.70	182.00	6,931.9	-1,914.3	518.7	1,960.7	2.17	-1.25	1.77

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17R-243
Project:	SEC.17-T4N-R67W	TVD Reference:	WELL @ 4807.0ft (RKB - 13')
Site:	Lajco 4N67W17R Pad Sec.17-T4N-R67W	MD Reference:	WELL @ 4807.0ft (RKB - 13')
Well:	Lajco 17R-243	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
9,011.0	90.10	182.00	6,932.1	-2,010.3	515.3	2,055.7	0.42	0.42	0.00
9,106.0	90.20	181.80	6,931.8	-2,105.2	512.2	2,149.7	0.24	0.11	-0.21
9,203.0	89.70	182.40	6,931.9	-2,202.2	508.6	2,245.6	0.81	-0.52	0.62
9,298.0	90.60	181.50	6,931.7	-2,297.1	505.4	2,339.5	1.34	0.95	-0.95
9,394.0	90.60	181.50	6,930.7	-2,393.1	502.9	2,434.6	0.00	0.00	0.00
9,490.0	90.70	180.30	6,929.6	-2,489.0	501.4	2,529.8	1.25	0.10	-1.25
9,586.0	90.60	180.80	6,928.5	-2,585.0	500.5	2,625.1	0.53	-0.10	0.52
9,682.0	90.50	181.10	6,927.6	-2,681.0	498.9	2,720.2	0.33	-0.10	0.31
9,778.0	90.40	178.80	6,926.8	-2,777.0	499.0	2,815.6	2.40	-0.10	-2.40
9,873.0	90.50	177.40	6,926.1	-2,871.9	502.1	2,910.3	1.48	0.11	-1.47
9,969.0	90.90	178.30	6,924.9	-2,967.9	505.7	3,006.0	1.03	0.42	0.94
10,065.0	90.50	180.60	6,923.7	-3,063.9	506.6	3,101.5	2.43	-0.42	2.40
10,161.0	90.70	181.10	6,922.7	-3,159.8	505.2	3,196.7	0.56	0.21	0.52
10,257.0	90.90	181.10	6,921.4	-3,255.8	503.4	3,291.9	0.21	0.21	0.00
10,352.0	91.10	182.00	6,919.7	-3,350.8	500.8	3,385.9	0.97	0.21	0.95
10,448.0	90.00	180.10	6,918.8	-3,446.7	499.0	3,481.1	2.29	-1.15	-1.98
10,543.0	89.80	180.10	6,919.0	-3,541.7	498.9	3,575.4	0.21	-0.21	0.00
10,640.0	89.40	179.60	6,919.6	-3,638.7	499.1	3,671.8	0.66	-0.41	-0.52
10,735.0	89.50	180.10	6,920.6	-3,733.7	499.4	3,766.2	0.54	0.11	0.53
10,830.0	89.60	179.20	6,921.3	-3,828.7	500.0	3,860.7	0.95	0.11	-0.95
10,925.0	90.50	181.30	6,921.2	-3,923.7	499.5	3,955.0	2.40	0.95	2.21
11,021.0	91.40	180.10	6,919.6	-4,019.7	498.4	4,050.3	1.56	0.94	-1.25
11,117.0	91.30	180.10	6,917.4	-4,115.7	498.2	4,145.6	0.10	-0.10	0.00
11,213.0	91.40	180.80	6,915.1	-4,211.6	497.4	4,240.9	0.74	0.10	0.73
11,309.0	91.50	180.10	6,912.7	-4,307.6	496.7	4,336.1	0.74	0.10	-0.73
11,385.0	91.50	180.60	6,910.7	-4,383.6	496.2	4,411.6	0.66	0.00	0.66
11,434.9	91.50	180.60	6,909.4	-4,433.5	495.7	4,461.1	0.00	0.00	0.00
BHL 500'FSL & 1756'FEL									
11,435.0	91.50	180.60	6,909.4	-4,433.5	495.7	4,461.2	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 355'FNL & 2185'FE	0.00	0.00	5.0	0.0	0.0	1,359,694.88	3,163,455.97	40.319280	-104.913800
- hit/miss target									
- Shape									
- survey hits target center									
- Point									
BHL 500'FSL & 1756'FE	0.00	0.00	6,910.0	-4,433.6	504.8	1,355,264.90	3,163,990.06	40.307110	-104.911990
- survey misses target center by 9.1ft at 11434.9ft MD (6909.4 TVD, -4433.5 N, 495.7 E)									
- Point									

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17R-243
Project:	SEC.17-T4N-R67W	TVD Reference:	WELL @ 4807.0ft (RKB - 13')
Site:	Lajco 4N67W17R Pad Sec.17-T4N-R67W	MD Reference:	WELL @ 4807.0ft (RKB - 13')
Well:	Lajco 17R-243	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,100.2	6,904.3	-105.0	526.5	460'FNL & 1659'FEL
7,353.0	6,944.6	-352.6	521.0	Deepest TVD Drilled - 3944.57'

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------