

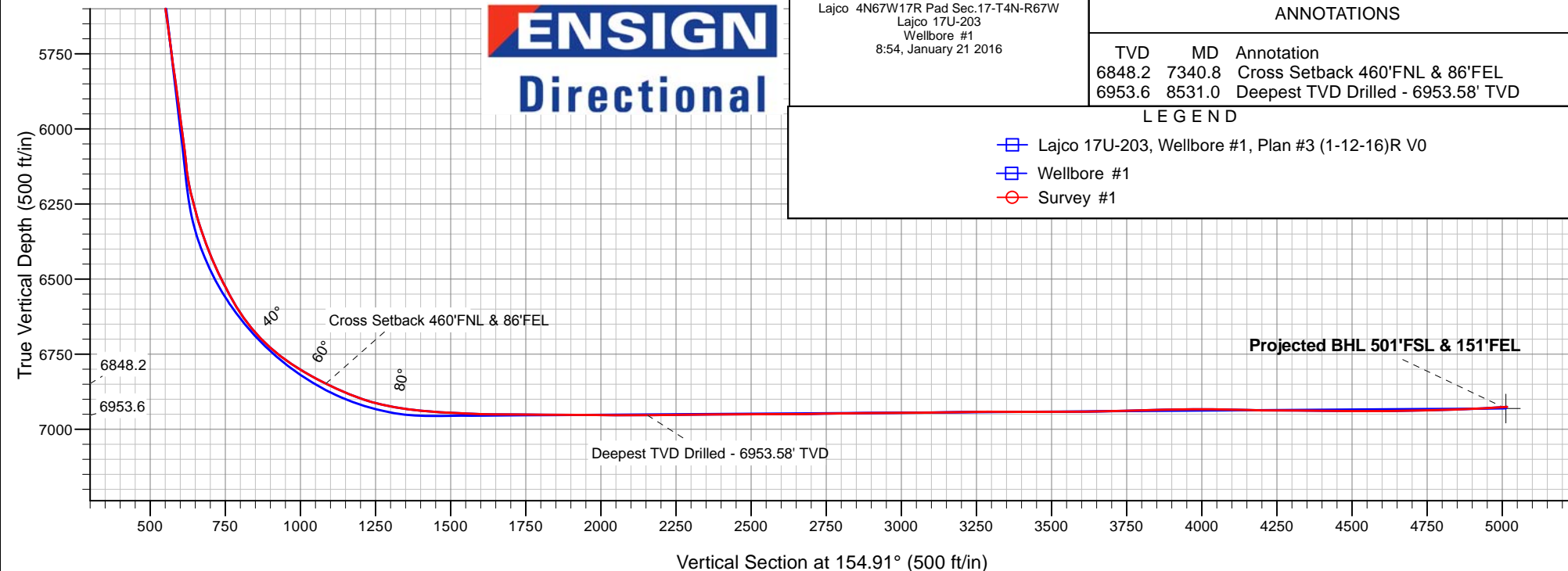
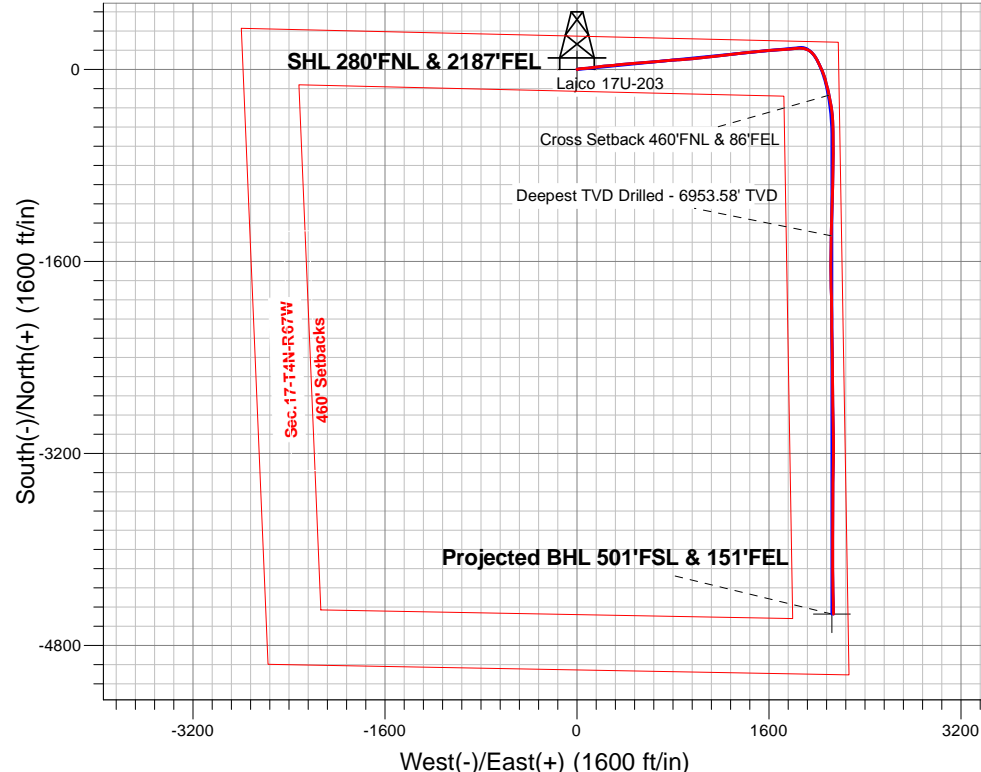
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Lajco 17U-203**

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 0.01359771.353163452.68 40.319490 -104.913810
RKB - 13' WELL @ 4807.0ft (RKB - 13')

FINAL SURVEY

Projected Bottom Hole Location
11683'MD 6926'TVD 4538'S & 2138'E of SHL
93.1 degree Incl @ 178.8 degree AZM





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.17-T4N-R67W

Lajco 4N67W17R Pad Sec.17-T4N-R67W

Lajco 17U-203

Wellbore #1

Survey: Survey #1

Standard Survey Report

21 January, 2016

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17U-203
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 17U-203	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 17U-203					
Well Position	+N/-S	0.0 ft	Northing:	1,359,771.35 usft	Latitude:	40.319490
	+E/-W	0.0 ft	Easting:	3,163,452.68 usft	Longitude:	-104.913810
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	1/12/2016	8.32	66.80	52,592

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	154.91	

Survey Program	Date	1/21/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
105.0	11,683.0	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	
105.0	0.60	22.40	105.0	0.5	0.2	-0.4	0.57	0.57	0.00	
167.0	1.10	46.30	167.0	1.2	0.8	-0.8	0.97	0.81	38.55	
264.0	2.60	76.30	263.9	2.4	3.6	-0.6	1.79	1.55	30.93	
360.0	4.00	75.50	359.8	3.7	8.9	0.4	1.46	1.46	-0.83	
456.0	5.40	87.90	455.5	4.7	16.7	2.8	1.79	1.46	12.92	
552.0	6.90	88.30	550.9	5.1	27.0	6.8	1.56	1.56	0.42	
647.0	7.80	84.30	645.1	5.9	39.1	11.2	1.09	0.95	-4.21	
743.0	9.30	84.40	740.0	7.3	53.3	16.0	1.56	1.56	0.10	
839.0	10.60	84.10	834.6	9.0	69.8	21.5	1.36	1.35	-0.31	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17U-203
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 17U-203	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	11.60	83.90	928.8	10.9	88.2	27.5	1.04	1.04	-0.21
1,031.0	12.70	83.20	1,022.7	13.2	108.2	34.0	1.16	1.15	-0.73
1,127.0	12.90	82.10	1,116.3	15.9	129.3	40.5	0.33	0.21	-1.15
1,319.0	11.90	80.70	1,303.8	22.0	170.1	52.2	0.54	-0.52	-0.73
1,415.0	15.20	83.90	1,397.1	25.0	192.4	59.0	3.52	3.44	3.33
1,510.0	16.70	87.10	1,488.4	27.0	218.4	68.2	1.83	1.58	3.37
1,606.0	19.90	85.10	1,579.6	29.1	248.5	79.0	3.40	3.33	-2.08
1,702.0	21.10	84.60	1,669.5	32.1	282.0	90.5	1.26	1.25	-0.52
1,798.0	19.70	80.60	1,759.5	36.4	315.1	100.7	2.06	-1.46	-4.17
1,894.0	20.90	85.80	1,849.5	40.3	348.2	111.2	2.26	1.25	5.42
1,990.0	19.80	83.20	1,939.5	43.4	381.4	122.4	1.48	-1.15	-2.71
2,086.0	20.20	86.00	2,029.7	46.5	414.1	133.4	1.08	0.42	2.92
2,181.0	17.40	85.50	2,119.7	48.8	444.6	144.3	2.95	-2.95	-0.53
2,277.0	19.40	87.40	2,210.8	50.6	474.8	155.5	2.17	2.08	1.98
2,373.0	20.70	86.00	2,300.9	52.5	507.7	167.7	1.44	1.35	-1.46
2,469.0	21.20	85.10	2,390.6	55.2	541.9	179.8	0.62	0.52	-0.94
2,564.0	21.60	85.10	2,479.0	58.2	576.5	191.8	0.42	0.42	0.00
2,661.0	19.70	85.00	2,569.8	61.1	610.5	203.5	1.96	-1.96	-0.10
2,757.0	19.80	83.60	2,660.2	64.3	642.8	214.3	0.50	0.10	-1.46
2,852.0	19.60	84.80	2,749.6	67.6	674.7	224.9	0.47	-0.21	1.26
2,948.0	20.50	85.30	2,839.8	70.4	707.5	236.2	0.95	0.94	0.52
3,044.0	16.30	84.60	2,930.9	73.1	737.6	246.6	4.38	-4.38	-0.73
3,139.0	17.50	86.70	3,021.7	75.1	765.2	256.4	1.42	1.26	2.21
3,235.0	17.00	85.70	3,113.4	77.0	793.6	266.7	0.61	-0.52	-1.04
3,331.0	17.40	87.10	3,205.1	78.8	821.9	277.1	0.60	0.42	1.46
3,427.0	18.30	85.10	3,296.5	80.8	851.3	287.8	1.13	0.94	-2.08
3,523.0	18.60	87.60	3,387.6	82.7	881.6	298.9	0.88	0.31	2.60
3,619.0	18.60	83.60	3,478.6	85.1	912.1	309.7	1.33	0.00	-4.17
3,714.0	17.90	83.60	3,568.8	88.4	941.7	319.2	0.74	-0.74	0.00
3,810.0	19.30	85.50	3,659.8	91.3	972.1	329.5	1.59	1.46	1.98
3,906.0	21.10	83.90	3,749.9	94.4	1,005.1	340.7	1.96	1.88	-1.67
4,001.0	18.60	85.10	3,839.2	97.5	1,037.2	351.5	2.67	-2.63	1.26
4,097.0	18.40	85.50	3,930.3	100.0	1,067.6	362.1	0.25	-0.21	0.42
4,193.0	18.60	82.90	4,021.3	103.1	1,097.9	372.2	0.88	0.21	-2.71
4,287.0	19.60	79.90	4,110.1	107.7	1,128.3	380.9	1.49	1.06	-3.19
4,383.0	20.00	86.20	4,200.5	111.6	1,160.5	391.0	2.26	0.42	6.56
4,478.0	21.60	85.30	4,289.3	114.1	1,194.2	403.0	1.72	1.68	-0.95
4,574.0	20.50	83.40	4,378.9	117.5	1,228.5	414.5	1.35	-1.15	-1.98
4,670.0	19.80	79.30	4,469.0	122.4	1,261.2	423.9	1.64	-0.73	-4.27
4,766.0	20.00	82.90	4,559.3	127.5	1,293.4	433.0	1.29	0.21	3.75
4,862.0	21.50	84.30	4,649.0	131.3	1,327.2	443.9	1.65	1.56	1.46
4,958.0	20.30	84.30	4,738.7	134.7	1,361.3	455.3	1.25	-1.25	0.00
5,054.0	17.20	81.80	4,829.6	138.3	1,391.9	464.9	3.34	-3.23	-2.60
5,150.0	16.90	84.40	4,921.4	141.7	1,419.9	473.7	0.85	-0.31	2.71

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17U-203
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 17U-203	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)
5,245.0	17.80	84.30	5,012.1	144.5	1,448.1	483.1	0.95	0.95	-0.11
5,341.0	18.00	83.20	5,103.4	147.7	1,477.4	492.7	0.41	0.21	-1.15
5,437.0	18.10	82.30	5,194.7	151.5	1,506.9	501.8	0.31	0.10	-0.94
5,533.0	17.50	87.40	5,286.1	154.1	1,536.1	511.7	1.74	-0.63	5.31
5,629.0	17.30	84.80	5,377.7	156.1	1,564.7	522.1	0.84	-0.21	-2.71
5,724.0	20.00	90.90	5,467.7	157.1	1,595.0	534.1	3.50	2.84	6.42
5,820.0	20.70	82.70	5,557.7	159.0	1,628.3	546.4	3.06	0.73	-8.54
5,915.0	20.50	86.50	5,646.7	162.2	1,661.6	557.7	1.42	-0.21	4.00
6,011.0	20.30	85.00	5,736.7	164.6	1,694.9	569.6	0.58	-0.21	-1.56
6,107.0	21.60	86.40	5,826.3	167.2	1,729.1	581.8	1.45	1.35	1.46
6,231.0	20.40	85.00	5,942.1	170.5	1,773.5	597.6	1.05	-0.97	-1.13
6,327.0	22.00	85.00	6,031.6	173.5	1,808.0	609.5	1.67	1.67	0.00
6,422.0	18.60	82.10	6,120.7	177.2	1,840.8	620.1	3.73	-3.58	-3.05
6,518.0	22.90	96.70	6,210.5	177.1	1,874.5	634.5	6.98	4.48	15.21
6,614.0	23.70	109.40	6,298.7	168.5	1,911.3	657.8	5.29	0.83	13.23
6,710.0	22.50	127.70	6,387.1	150.8	1,944.1	687.7	7.55	-1.25	19.06
6,806.0	26.60	137.20	6,474.5	123.8	1,973.2	724.6	5.92	4.27	9.90
6,902.0	28.60	154.60	6,559.7	87.2	1,997.7	768.1	8.62	2.08	18.13
6,998.0	36.30	154.40	6,640.6	40.8	2,019.9	819.6	8.02	8.02	-0.21
7,093.0	46.00	156.70	6,712.1	-16.1	2,045.6	882.0	10.33	10.21	2.42
7,189.0	55.50	164.80	6,772.8	-86.2	2,069.8	955.7	11.84	9.90	8.44
7,285.0	61.70	166.50	6,822.8	-165.6	2,090.0	1,036.2	6.63	6.46	1.77
7,381.0	66.00	168.50	6,865.1	-249.7	2,108.6	1,120.2	4.85	4.48	2.08
7,477.0	71.80	172.90	6,899.7	-338.0	2,123.0	1,206.3	7.40	6.04	4.58
7,573.0	80.10	177.40	6,923.0	-430.7	2,130.8	1,293.6	9.77	8.65	4.69
7,669.0	83.90	178.80	6,936.3	-525.7	2,134.0	1,381.0	4.21	3.96	1.46
7,765.0	87.10	179.00	6,943.8	-621.4	2,135.8	1,468.4	3.34	3.33	0.21
7,860.0	87.70	180.40	6,948.2	-716.3	2,136.3	1,554.5	1.60	0.63	1.47
7,956.0	89.30	180.80	6,950.7	-812.2	2,135.3	1,641.0	1.72	1.67	0.42
8,051.0	90.00	182.20	6,951.2	-907.2	2,132.8	1,726.0	1.65	0.74	1.47
8,147.0	89.30	182.70	6,951.8	-1,003.1	2,128.7	1,811.1	0.90	-0.73	0.52
8,243.0	90.00	180.80	6,952.4	-1,099.1	2,125.8	1,896.7	2.11	0.73	-1.98
8,339.0	89.70	181.50	6,952.7	-1,195.0	2,123.9	1,982.9	0.79	-0.31	0.73
8,434.0	89.30	180.80	6,953.5	-1,290.0	2,121.9	2,068.1	0.85	-0.42	-0.74
8,531.0	90.60	181.30	6,953.6	-1,387.0	2,120.2	2,155.1	1.44	1.34	0.52
8,626.0	90.90	180.90	6,952.3	-1,482.0	2,118.3	2,240.4	0.53	0.32	-0.42
8,722.0	90.20	181.80	6,951.4	-1,577.9	2,116.1	2,326.3	1.19	-0.73	0.94
8,818.0	90.20	179.90	6,951.1	-1,673.9	2,114.7	2,412.7	1.98	0.00	-1.98
8,914.0	90.60	178.10	6,950.4	-1,769.9	2,116.3	2,500.3	1.92	0.42	-1.88
9,010.0	90.00	178.10	6,949.9	-1,865.8	2,119.5	2,588.5	0.63	-0.63	0.00
9,105.0	90.30	179.50	6,949.7	-1,960.8	2,121.5	2,675.4	1.51	0.32	1.47
9,201.0	91.10	179.40	6,948.5	-2,056.8	2,122.4	2,762.7	0.84	0.83	-0.10
9,297.0	90.90	179.00	6,946.8	-2,152.8	2,123.8	2,850.2	0.47	-0.21	-0.42

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Well:	Lajco 17U-203	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

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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)
9,393.0	90.20	179.20	6,945.9	-2,248.8	2,125.3	2,937.8	0.76	-0.73	0.21
9,489.0	90.60	178.70	6,945.2	-2,344.7	2,127.0	3,025.4	0.67	0.42	-0.52
9,585.0	90.20	179.20	6,944.6	-2,440.7	2,128.8	3,113.1	0.67	-0.42	0.52
9,680.0	91.20	179.20	6,943.4	-2,535.7	2,130.1	3,199.7	1.05	1.05	0.00
9,776.0	90.60	180.10	6,941.9	-2,631.7	2,130.7	3,286.9	1.13	-0.63	0.94
9,872.0	89.20	179.40	6,942.0	-2,727.7	2,131.1	3,374.0	1.63	-1.46	-0.73
9,968.0	90.70	179.20	6,942.1	-2,823.7	2,132.3	3,461.4	1.58	1.56	-0.21
10,064.0	89.90	178.70	6,941.6	-2,919.7	2,134.1	3,549.1	0.98	-0.83	-0.52
10,160.0	91.20	179.20	6,940.7	-3,015.6	2,135.8	3,636.8	1.45	1.35	0.52
10,256.0	90.80	179.00	6,939.0	-3,111.6	2,137.3	3,724.3	0.47	-0.42	-0.21
10,351.0	91.50	180.40	6,937.1	-3,206.6	2,137.8	3,810.5	1.65	0.74	1.47
10,447.0	91.50	181.10	6,934.6	-3,302.5	2,136.6	3,896.9	0.73	0.00	0.73
10,542.0	89.90	181.30	6,933.5	-3,397.5	2,134.6	3,982.1	1.70	-1.68	0.21
10,638.0	89.00	180.60	6,934.4	-3,493.5	2,133.0	4,068.3	1.19	-0.94	-0.73
10,734.0	88.50	179.70	6,936.5	-3,589.5	2,132.7	4,155.1	1.07	-0.52	-0.94
10,829.0	89.80	180.60	6,937.9	-3,684.5	2,132.5	4,241.1	1.66	1.37	0.95
10,924.0	89.80	180.20	6,938.2	-3,779.5	2,131.8	4,326.8	0.42	0.00	-0.42
11,020.0	89.80	180.20	6,938.5	-3,875.5	2,131.5	4,413.6	0.00	0.00	0.00
11,116.0	89.20	180.40	6,939.4	-3,971.4	2,131.0	4,500.3	0.66	-0.63	0.21
11,212.0	90.00	179.50	6,940.1	-4,067.4	2,131.1	4,587.3	1.25	0.83	-0.94
11,308.0	91.40	179.90	6,938.9	-4,163.4	2,131.6	4,674.5	1.52	1.46	0.42
11,403.0	91.20	179.40	6,936.7	-4,258.4	2,132.2	4,760.7	0.57	-0.21	-0.53
11,499.0	91.70	178.70	6,934.3	-4,354.4	2,133.7	4,848.3	0.90	0.52	-0.73
11,595.0	92.70	178.80	6,930.6	-4,450.3	2,135.8	4,936.0	1.05	1.04	0.10
11,633.0	93.10	178.80	6,928.7	-4,488.2	2,136.6	4,970.7	1.05	1.05	0.00
11,683.0	93.10	178.80	6,926.0	-4,538.1	2,137.7	5,016.4	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
- hit/miss target									
- Shape									
SHL 280'FNL & 2187'FE	0.00	0.00	1.0	0.0	0.0	1,359,771.36	3,163,452.68	40.319490	-104.913810
- survey hits target center									
- Point									
BHL 500'FSL & 139'FEL	0.00	0.00	6,931.0	-4,539.2	2,125.3	1,355,246.54	3,165,607.80	40.307030	-104.906190
- survey misses target center by 13.4ft at 11683.0ft MD (6926.0 TVD, -4538.1 N, 2137.7 E)									
- Point									

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Lajco 17U-203
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 17U-203	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)	
7,340.8	6,848.2	-214.0	2,101.1	Cross Setback 460'FNL & 86'FEL
8,531.0	6,953.6	-1,387.0	2,120.2	Deepest TVD Drilled - 6953.58' TVD

Checked By: _____	Approved By: _____	Date: _____
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