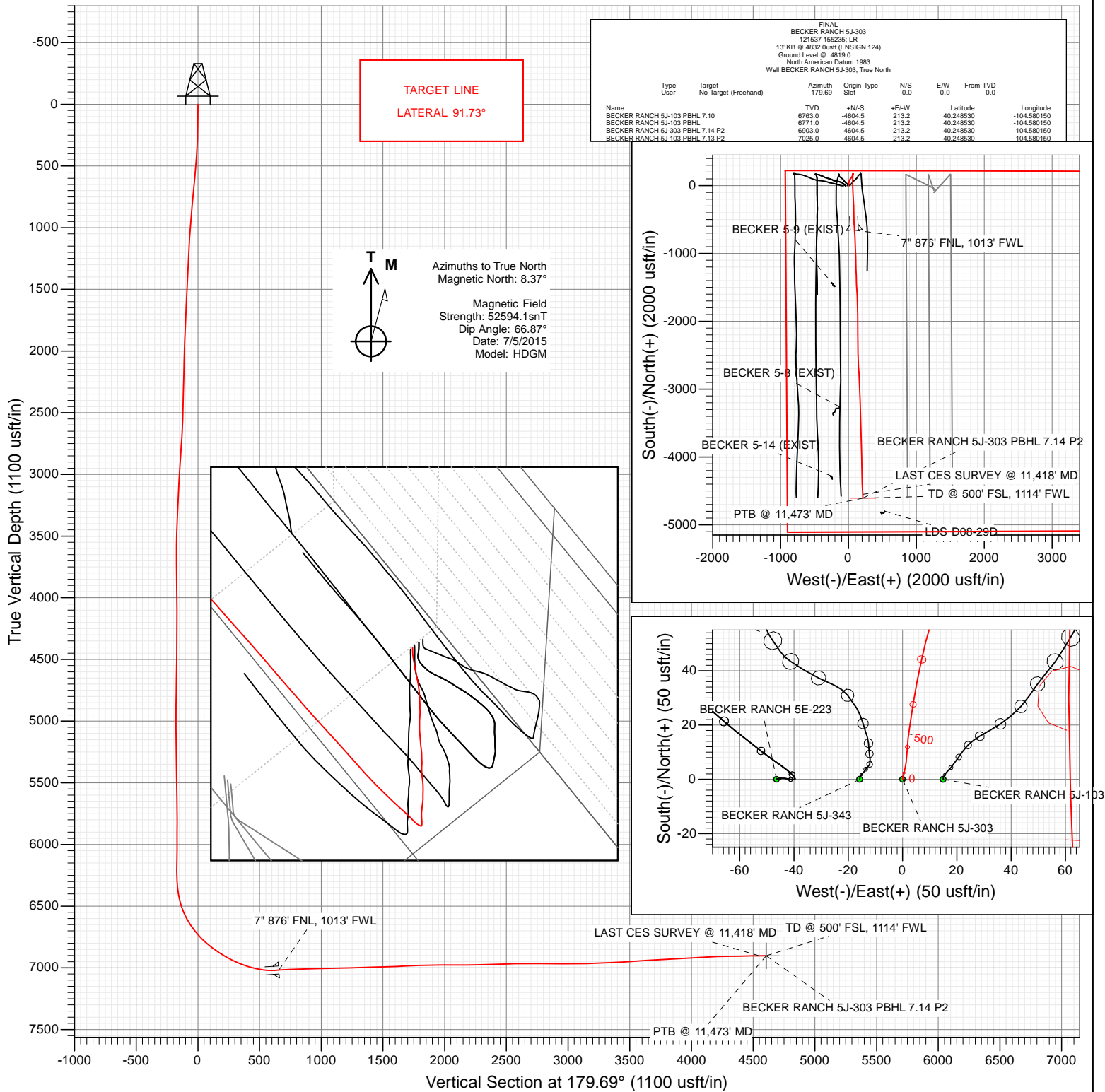




Petroleum Development Corporation

Project: Weld County  
Site: S5-T3N-R64W  
Well: BECKER RANCH 5J-303  
Wellbore: OH  
Design: FINAL



WELL DETAILS: BECKER RANCH 5J-303

Ground Level: 4819.0  
+N/-S +E/-W Northing Easting Latitude Longitude  
0.0 0.0 1339314.99 3256494.64 40.261170 -104.580914



## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well BECKER RANCH 5J-303
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Site:</b>	S5-T3N-R64W	<b>MD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Well:</b>	BECKER RANCH 5J-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	Weld County		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		S5-T3N-R64W			
Site Position:		Northing:	1,339,314.55 usft	Latitude:	40.261170
From:	Lat/Long	Easting:	3,256,448.24 usft	Longitude:	-104.581080
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.59 °

Well	BECKER RANCH 5J-303					
Well Position	+N/-S	0.0 usft	Northing:	1,339,314.99 usft	Latitude:	40.261170
	+E/-W	0.0 usft	Easting:	3,256,494.64 usft	Longitude:	-104.580914
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,819.0 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	7/5/2015	8.37	66.87	52,594

<b>Design</b>	FINAL				
<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) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	179.69	

<b>Survey Program</b>	<b>Date</b>	7/28/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
159.0	11,473.0	Survey #1 (OH)	MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usf)</b>	<b>Build Rate (°/100u)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
159.0	0.60	8.20	159.0	0.8	0.1	-0.8	0.38	0.38		
251.0	1.40	18.40	251.0	2.4	0.5	-2.4	0.89	0.87		
343.0	3.40	8.60	342.9	6.1	1.3	-6.1	2.21	2.17		
436.0	3.70	2.30	435.7	11.9	1.8	-11.8	0.53	0.32		
528.0	5.40	8.60	527.4	19.1	2.6	-19.1	1.92	1.85		
620.0	5.40	8.70	619.0	27.7	3.9	-27.6	0.01	0.00		
713.0	5.10	11.20	711.6	36.0	5.4	-36.0	0.41	-0.32		
805.0	5.30	12.30	803.2	44.2	7.1	-44.2	0.24	0.22		
879.0	5.10	13.50	876.9	50.7	8.6	-50.7	0.31	-0.27		
987.0	4.90	17.30	984.5	59.8	11.1	-59.8	0.36	-0.19		
1,080.0	3.40	4.70	1,077.3	66.4	12.5	-66.3	1.88	-1.61		
1,172.0	3.60	4.40	1,169.1	72.0	12.9	-71.9	0.22	0.22		

## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well BECKER RANCH 5J-303
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Site:</b>	S5-T3N-R64W	<b>MD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Well:</b>	BECKER RANCH 5J-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,265.0	2.90	22.10	1,262.0	77.0	14.0	-77.0	1.31	-0.75	
1,357.0	2.90	14.60	1,353.9	81.5	15.5	-81.4	0.41	0.00	
1,450.0	2.90	36.30	1,446.7	85.6	17.5	-85.5	1.17	0.00	
1,542.0	3.20	31.50	1,538.6	89.7	20.2	-89.6	0.43	0.33	
1,635.0	3.10	24.20	1,631.5	94.2	22.6	-94.1	0.44	-0.11	
1,728.0	3.00	45.70	1,724.3	98.2	25.3	-98.1	1.23	-0.11	
1,820.0	3.10	37.60	1,816.2	101.8	28.6	-101.7	0.48	0.11	
1,913.0	3.10	27.40	1,909.1	106.1	31.3	-105.9	0.59	0.00	
2,008.0	2.60	63.10	2,004.0	109.3	34.4	-109.1	1.91	-0.53	
2,104.0	2.60	49.60	2,099.9	111.7	38.0	-111.5	0.64	0.00	
2,199.0	2.30	41.10	2,194.8	114.6	40.9	-114.3	0.50	-0.32	
2,295.0	1.60	36.90	2,290.7	117.1	42.9	-116.8	0.74	-0.73	
2,390.0	1.10	32.20	2,385.7	118.9	44.2	-118.7	0.54	-0.53	
2,486.0	1.30	25.60	2,481.7	120.7	45.2	-120.4	0.25	0.21	
2,581.0	2.90	28.70	2,576.6	123.8	46.8	-123.5	1.69	1.68	
2,676.0	4.30	27.70	2,671.4	129.0	49.6	-128.7	1.48	1.47	
2,772.0	4.00	24.00	2,767.2	135.3	52.7	-135.0	0.42	-0.31	
2,867.0	3.40	24.20	2,862.0	140.9	55.2	-140.6	0.63	-0.63	
2,963.0	4.40	20.00	2,957.7	146.9	57.6	-146.6	1.08	1.04	
3,058.0	3.40	14.70	3,052.5	153.1	59.5	-152.7	1.12	-1.05	
3,153.0	2.60	12.50	3,147.4	157.9	60.7	-157.6	0.85	-0.84	
3,249.0	2.90	34.90	3,243.3	162.0	62.6	-161.7	1.15	0.31	
3,344.0	3.00	35.10	3,338.2	166.0	65.4	-165.7	0.11	0.11	
3,440.0	3.00	38.10	3,434.0	170.0	68.4	-169.7	0.16	0.00	
3,535.0	1.60	45.40	3,528.9	172.9	70.9	-172.5	1.50	-1.47	
3,631.0	0.50	92.20	3,624.9	173.9	72.2	-173.5	1.36	-1.15	
3,726.0	0.70	235.10	3,719.9	173.5	72.2	-173.1	1.20	0.21	
3,822.0	0.70	227.30	3,815.9	172.8	71.3	-172.4	0.10	0.00	
3,917.0	0.80	235.90	3,910.9	172.0	70.3	-171.6	0.16	0.11	
4,013.0	1.00	247.00	4,006.9	171.3	69.0	-170.9	0.28	0.21	
4,108.0	1.40	252.70	4,101.9	170.6	67.1	-170.3	0.44	0.42	
4,203.0	1.70	254.70	4,196.8	169.9	64.6	-169.6	0.32	0.32	
4,299.0	1.30	271.60	4,292.8	169.6	62.2	-169.2	0.62	-0.42	
4,394.0	1.20	6.40	4,387.8	170.6	61.2	-170.3	1.94	-0.11	
4,490.0	1.00	341.30	4,483.8	172.4	61.0	-172.1	0.54	-0.21	
4,585.0	0.80	62.70	4,578.8	173.5	61.4	-173.1	1.25	-0.21	
4,681.0	0.90	10.50	4,674.8	174.5	62.1	-174.2	0.78	0.10	
4,776.0	1.10	63.80	4,769.8	175.7	63.1	-175.3	0.96	0.21	
4,871.0	0.70	40.20	4,864.7	176.5	64.2	-176.2	0.57	-0.42	
4,967.0	0.40	320.30	4,960.7	177.2	64.4	-176.9	0.77	-0.31	
5,062.0	0.60	92.30	5,055.7	177.5	64.7	-177.1	0.97	0.21	
5,158.0	0.70	123.90	5,151.7	177.1	65.7	-176.7	0.38	0.10	
5,253.0	1.10	137.70	5,246.7	176.1	66.8	-175.7	0.48	0.42	
5,348.0	1.20	150.80	5,341.7	174.6	67.9	-174.2	0.30	0.11	
5,444.0	0.70	169.40	5,437.7	173.1	68.5	-172.7	0.61	-0.52	
5,539.0	1.00	189.00	5,532.7	171.7	68.5	-171.3	0.44	0.32	
5,635.0	0.90	183.60	5,628.7	170.1	68.3	-169.8	0.14	-0.10	
5,730.0	0.50	162.20	5,723.7	169.0	68.4	-168.6	0.50	-0.42	
5,825.0	0.10	59.40	5,818.7	168.6	68.6	-168.3	0.56	-0.42	
5,921.0	1.00	338.20	5,914.6	169.5	68.3	-169.1	1.03	0.94	
6,016.0	0.40	308.30	6,009.6	170.4	67.7	-170.1	0.72	-0.63	
6,111.0	0.20	268.90	6,104.6	170.6	67.3	-170.3	0.29	-0.21	
6,207.0	0.20	314.50	6,200.6	170.8	67.0	-170.4	0.16	0.00	

## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well BECKER RANCH 5J-303
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Site:</b>	S5-T3N-R64W	<b>MD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Well:</b>	BECKER RANCH 5J-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,254.0	0.50	180.40	6,247.6	170.6	67.0	-170.2	1.39	0.64	
6,302.0	2.70	192.20	6,295.6	169.3	66.7	-168.9	4.61	4.58	
6,349.0	5.30	183.50	6,342.5	166.0	66.4	-165.7	5.66	5.53	
6,397.0	8.90	188.50	6,390.1	160.2	65.7	-159.8	7.60	7.50	
6,445.0	13.40	182.80	6,437.2	150.9	64.9	-150.6	9.64	9.37	
6,494.0	16.70	179.00	6,484.5	138.2	64.7	-137.9	7.03	6.73	
6,541.0	20.30	180.40	6,529.1	123.3	64.8	-123.0	7.72	7.66	
6,589.0	25.00	182.90	6,573.4	104.8	64.2	-104.5	9.99	9.79	
6,636.0	30.10	183.70	6,615.0	83.1	62.9	-82.8	10.88	10.85	
6,684.0	34.30	182.30	6,655.6	57.6	61.6	-57.3	8.89	8.75	
6,731.0	38.00	179.40	6,693.6	29.9	61.2	-29.6	8.67	7.87	
6,780.0	41.60	178.40	6,731.2	-1.5	61.8	1.8	7.46	7.35	
6,827.0	45.40	177.40	6,765.3	-33.8	63.0	34.1	8.22	8.09	
6,875.0	48.50	176.60	6,798.1	-68.8	64.9	69.2	6.57	6.46	
6,922.0	50.90	176.70	6,828.5	-104.6	67.0	104.9	5.11	5.11	
6,971.0	54.40	176.90	6,858.2	-143.5	69.1	143.8	7.15	7.14	
7,018.0	58.40	176.70	6,884.2	-182.5	71.3	182.9	8.52	8.51	
7,066.0	61.00	177.40	6,908.4	-223.9	73.5	224.3	5.56	5.42	
7,113.0	63.40	177.10	6,930.3	-265.5	75.5	265.9	5.14	5.11	
7,161.0	66.20	178.70	6,950.8	-308.9	77.0	309.3	6.57	5.83	
7,208.0	67.50	178.50	6,969.2	-352.1	78.1	352.5	2.79	2.77	
7,257.0	70.40	179.40	6,986.8	-397.8	78.9	398.2	6.16	5.92	
7,304.0	76.20	178.70	7,000.3	-442.8	79.7	443.2	12.42	12.34	
7,352.0	80.00	178.10	7,010.2	-489.7	81.0	490.1	8.01	7.92	
7,399.0	83.10	178.40	7,017.1	-536.2	82.4	536.6	6.63	6.60	
7,447.0	88.70	176.90	7,020.6	-584.0	84.4	584.4	12.08	11.67	
7,485.0	93.00	177.40	7,020.0	-621.9	86.3	622.4	11.39	11.32	
7,524.0	94.10	176.70	7,017.6	-660.8	88.3	661.3	3.34	2.82	
7,619.0	91.40	176.10	7,013.0	-755.5	94.2	756.0	2.91	-2.84	
7,715.0	92.70	177.40	7,009.6	-851.3	99.7	851.8	1.91	1.35	
7,810.0	91.40	178.10	7,006.2	-946.1	103.4	946.7	1.55	-1.37	
7,905.0	91.10	178.60	7,004.1	-1,041.1	106.1	1,041.6	0.61	-0.32	
8,001.0	90.70	178.70	7,002.6	-1,137.0	108.4	1,137.6	0.43	-0.42	
8,096.0	91.40	178.40	7,000.9	-1,232.0	110.8	1,232.6	0.80	0.74	
8,192.0	92.40	177.70	6,997.7	-1,327.9	114.1	1,328.5	1.27	1.04	
8,287.0	91.40	178.30	6,994.6	-1,422.8	117.4	1,423.4	1.23	-1.05	
8,383.0	92.10	176.70	6,991.6	-1,518.6	121.6	1,519.3	1.82	0.73	
8,478.0	92.00	178.00	6,988.2	-1,613.5	125.9	1,614.1	1.37	-0.11	
8,573.0	93.50	176.90	6,983.7	-1,708.3	130.2	1,708.9	1.96	1.58	
8,637.0	92.40	177.40	6,980.4	-1,772.1	133.3	1,772.8	1.89	-1.72	
8,669.0	91.60	177.40	6,979.3	-1,804.0	134.8	1,804.7	2.50	-2.50	
8,765.0	90.40	180.00	6,977.6	-1,900.0	137.0	1,900.7	2.98	-1.25	
8,860.0	90.70	179.80	6,976.7	-1,995.0	137.1	1,995.7	0.38	0.32	
8,955.0	89.00	180.90	6,976.9	-2,090.0	136.6	2,090.7	2.13	-1.79	
9,051.0	90.90	179.60	6,977.0	-2,186.0	136.1	2,186.7	2.40	1.98	
9,146.0	91.40	179.30	6,975.1	-2,280.9	137.1	2,281.7	0.61	0.53	
9,242.0	91.80	178.90	6,972.4	-2,376.9	138.6	2,377.6	0.59	0.42	
9,337.0	91.30	179.10	6,969.8	-2,471.8	140.2	2,472.6	0.57	-0.53	
9,433.0	91.70	177.90	6,967.3	-2,567.8	142.7	2,568.5	1.32	0.42	
9,528.0	91.20	176.40	6,964.9	-2,662.6	147.5	2,663.4	1.66	-0.53	
9,639.0	89.60	176.40	6,964.2	-2,773.4	154.4	2,774.2	1.44	-1.44	
9,734.0	89.00	178.00	6,965.3	-2,868.3	159.1	2,869.1	1.80	-0.63	
9,829.0	89.50	178.30	6,966.6	-2,963.2	162.1	2,964.1	0.61	0.53	

## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well BECKER RANCH 5J-303
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Site:</b>	S5-T3N-R64W	<b>MD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Well:</b>	BECKER RANCH 5J-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
9,925.0	90.10	177.80	6,966.9	-3,059.2	165.4	3,060.0	0.81	0.62	
10,020.0	92.20	178.10	6,965.0	-3,154.1	168.8	3,154.9	2.23	2.21	
10,116.0	92.10	177.60	6,961.4	-3,249.9	172.4	3,250.8	0.53	-0.10	
10,211.0	91.90	176.80	6,958.1	-3,344.8	177.0	3,345.7	0.87	-0.21	
10,307.0	94.20	177.80	6,953.0	-3,440.5	181.5	3,441.5	2.61	2.40	
10,402.0	93.80	178.30	6,946.3	-3,535.2	184.8	3,536.2	0.67	-0.42	
10,497.0	93.20	178.90	6,940.5	-3,630.0	187.1	3,631.0	0.89	-0.63	
10,593.0	93.50	178.50	6,934.9	-3,725.8	189.3	3,726.8	0.52	0.31	
10,688.0	93.40	178.70	6,929.2	-3,820.6	191.6	3,821.6	0.24	-0.11	
10,783.0	92.70	179.70	6,924.2	-3,915.5	192.9	3,916.5	1.28	-0.74	
10,879.0	93.10	179.30	6,919.3	-4,011.4	193.7	4,012.4	0.59	0.42	
10,974.0	94.10	178.60	6,913.3	-4,106.2	195.5	4,107.2	1.28	1.05	
11,070.0	91.90	179.00	6,908.3	-4,202.0	197.5	4,203.0	2.33	-2.29	
11,165.0	90.60	178.50	6,906.2	-4,297.0	199.6	4,298.0	1.47	-1.37	
11,260.0	91.30	177.80	6,904.7	-4,391.9	202.6	4,392.9	1.04	0.74	
11,356.0	90.60	177.10	6,903.1	-4,487.8	206.9	4,488.8	1.03	-0.73	
11,418.0	90.50	177.00	6,902.5	-4,549.7	210.1	4,550.8	0.23	-0.16	LAST CES SURVEY @ 11,418' MD
11,473.0	90.50	177.00	6,902.0	-4,604.6	213.0	4,605.7	0.00	0.00	PTB @ 11,473' MD - TD @ 500' FSL, 1114' FWL

## Survey Report

<b>Company:</b>	Petroleum Development Corp.	<b>Local Co-ordinate Reference:</b>	Well BECKER RANCH 5J-303
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Site:</b>	S5-T3N-R64W	<b>MD Reference:</b>	13' KB @ 4832.0usft (ENSIGN 124)
<b>Well:</b>	BECKER RANCH 5J-303	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
BECKER RANCH 5J-10	0.00	0.00	7,025.0	-4,604.5	213.2	1,334,712.90	3,256,755.54	40.248530	-104.580150
- actual wellpath misses target center by 123.0usft at 11471.9usft MD (6902.0 TVD, -4603.5 N, 212.9 E)									
- Point									
BECKER RANCH 5J-10	0.00	0.00	6,763.0	-4,604.5	213.2	1,334,712.90	3,256,755.54	40.248530	-104.580150
- actual wellpath misses target center by 139.0usft at 11473.0usft MD (6902.0 TVD, -4604.6 N, 213.0 E)									
- Point									
BECKER RANCH 5J-10	0.00	0.00	6,771.0	-4,604.5	213.2	1,334,712.90	3,256,755.54	40.248530	-104.580150
- actual wellpath misses target center by 131.0usft at 11473.0usft MD (6902.0 TVD, -4604.6 N, 213.0 E)									
- Point									
BECKER RANCH 5J-30	0.00	0.00	6,903.0	-4,604.5	213.2	1,334,712.90	3,256,755.54	40.248530	-104.580150
- actual wellpath misses target center by 1.0usft at 11472.9usft MD (6902.0 TVD, -4604.5 N, 213.0 E)									
- Point									

Casing Points					
	Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
	7,518.9	7,018.0	7" 876' FNL, 1013' FWL	0	0

Design Annotations					
	Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
			+N/-S (usft)	+E/-W (usft)	
	11,418.0	6,902.5	-4,549.7	210.1	LAST CES SURVEY @ 11,418' MD
	11,473.0	6,902.0	-4,604.6	213.0	PTB @ 11,473' MD
	11,473.0	6,902.0	-4,604.6	213.0	TD @ 500' FSL, 1114' FWL

Checked By: _____	Approved By: _____	Date: _____
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