

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Riteaway 32J-103

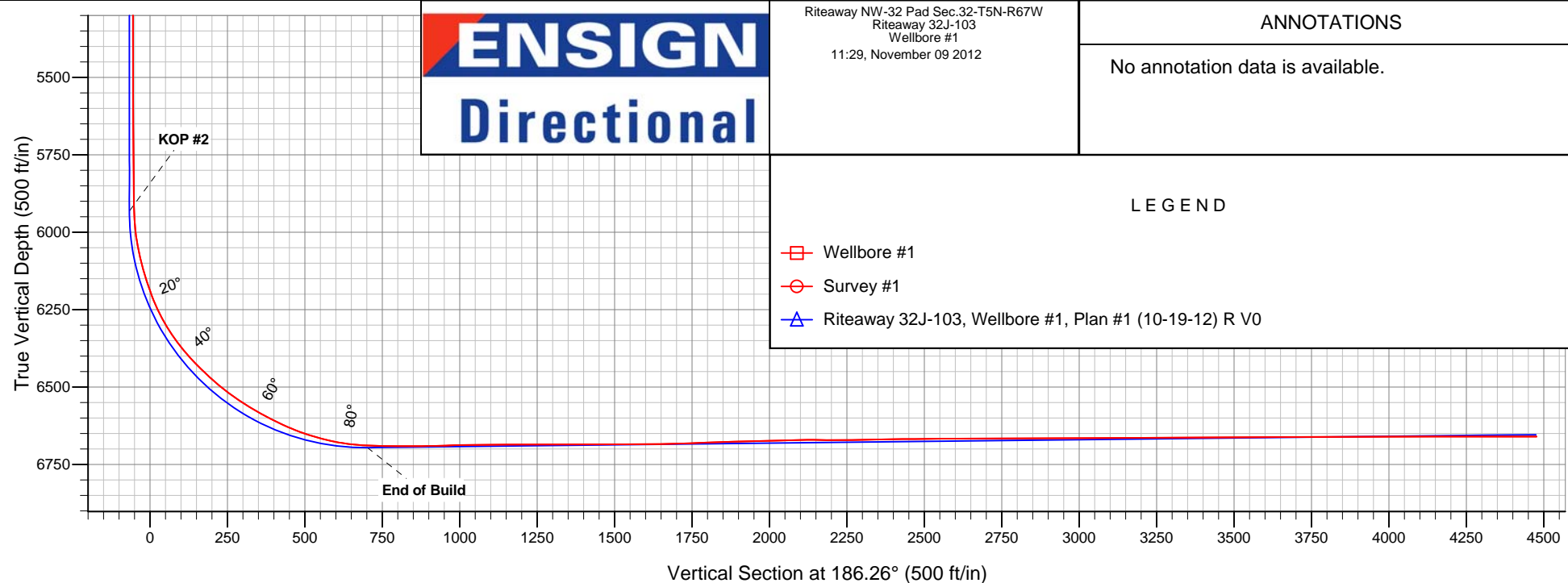
Surface Location: Riteaway NW-32 Pad Sec.32-T5N-R67W  
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4795.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1375474.98	3161584.89	40.362630	-104.920140	

Original Well Elev WELL @ 4810.0ft (Original Well Elev)

## FINAL SURVEY

**Projected Bottom Hole Location**  
**10940'MD 6660'TVD 4446'S & 527'W of SHL**  
**90.10 degree Incl @ 185.80 degree AZM**





## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.32-T5N-R67W**

**Riteaway NW-32 Pad Sec.32-T5N-R67W**

**Riteaway 32J-103**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**09 November, 2012**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Riteaway 32J-103
<b>Project:</b>	SEC.32-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Site:</b>	Riteaway NW-32 Pad Sec.32-T5N-R67W	<b>MD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Well:</b>	Riteaway 32J-103	<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>	Landmark

<b>Project</b>	SEC.32-T5N-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		Riteaway NW-32 Pad Sec.32-T5N-R67W			
Site Position:		Northing:	1,375,525.79ft	Latitude:	40.362770
From:	Lat/Long	Easting:	3,161,553.90ft	Longitude:	-104.920250
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.37 °

Well	Riteaway 32J-103					
Well Position	+N-S	0.0 ft	Northing:	1,375,474.98 ft	Latitude:	40.362630
	+E-W	0.0 ft	Easting:	3,161,584.89 ft	Longitude:	-104.920140
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,795.0 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	10/19/2012	8.76	66.95	52,954

<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>	
	6,654.0	0.0	0.0	186.26	

<b>Survey Program</b>	<b>Date</b>	11/9/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
113.0	10,940.0	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 (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>HARD LINE SHL 460'FNL - HARD LINE BHL 460'FSL</b>										
1.2	0.00	72.00	1.2	0.0	0.0	0.0	0.00	0.00	0.00	
<b>SECTION LINE 292'N OF SHL</b>										
113.0	0.10	72.00	113.0	0.0	0.1	0.0	0.09	0.09	0.00	
204.0	0.30	294.90	204.0	0.2	0.0	-0.1	0.42	0.22	-150.66	
296.0	0.20	232.70	296.0	0.2	-0.4	-0.1	0.30	-0.11	-67.61	
388.0	0.10	190.80	388.0	0.0	-0.5	0.1	0.15	-0.11	-45.54	
480.0	0.40	202.00	480.0	-0.4	-0.7	0.5	0.33	0.33	12.17	
571.0	0.70	228.40	571.0	-1.1	-1.2	1.2	0.42	0.33	29.01	
662.0	0.70	228.40	662.0	-1.8	-2.0	2.0	0.00	0.00	0.00	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Riteaway 32J-103
<b>Project:</b>	SEC.32-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Site:</b>	Riteaway NW-32 Pad Sec.32-T5N-R67W	<b>MD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Well:</b>	Riteaway 32J-103	<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>	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)
753.0	0.80	210.10	753.0	-2.7	-2.8	3.0	0.28	0.11	-20.11
845.0	1.20	221.40	845.0	-4.0	-3.7	4.4	0.48	0.43	12.28
943.0	2.00	241.20	942.9	-5.6	-5.9	6.2	0.98	0.82	20.20
1,034.0	2.90	244.00	1,033.8	-7.4	-9.4	8.3	1.00	0.99	3.08
1,126.0	4.30	261.20	1,125.7	-8.9	-14.9	10.5	1.91	1.52	18.70
1,219.0	5.80	269.50	1,218.3	-9.5	-23.0	11.9	1.79	1.61	8.92
1,314.0	7.00	273.50	1,312.7	-9.2	-33.6	12.8	1.35	1.26	4.21
1,409.0	7.70	276.30	1,406.9	-8.1	-45.7	13.1	0.83	0.74	2.95
1,504.0	7.70	277.80	1,501.1	-6.6	-58.3	12.9	0.21	0.00	1.58
1,599.0	7.80	278.70	1,595.2	-4.7	-71.0	12.4	0.17	0.11	0.95
1,694.0	7.70	281.50	1,689.3	-2.5	-83.6	11.6	0.41	-0.11	2.95
1,790.0	8.10	285.90	1,784.4	0.7	-96.4	9.9	0.75	0.42	4.58
1,885.0	7.60	284.00	1,878.5	4.0	-109.0	7.9	0.59	-0.53	-2.00
1,980.0	7.40	287.90	1,972.7	7.4	-120.9	5.8	0.58	-0.21	4.11
2,075.0	7.30	287.20	2,066.9	11.1	-132.5	3.4	0.14	-0.11	-0.74
2,171.0	7.60	286.10	2,162.1	14.6	-144.4	1.2	0.35	0.31	-1.15
2,266.0	9.40	289.40	2,256.1	19.0	-157.7	-1.7	1.96	1.89	3.47
2,361.0	10.50	289.90	2,349.7	24.5	-173.2	-5.5	1.16	1.16	0.53
2,456.0	10.40	288.50	2,443.1	30.2	-189.5	-9.3	0.29	-0.11	-1.47
2,552.0	9.30	288.00	2,537.7	35.3	-205.1	-12.7	1.15	-1.15	-0.52
2,647.0	9.10	286.70	2,631.4	39.8	-219.6	-15.7	0.30	-0.21	-1.37
2,742.0	8.20	290.00	2,725.4	44.3	-233.1	-18.6	1.08	-0.95	3.47
2,838.0	7.20	288.70	2,820.5	48.6	-245.3	-21.6	1.06	-1.04	-1.35
2,934.0	6.60	289.30	2,915.8	52.3	-256.2	-24.1	0.63	-0.63	0.63
3,029.0	7.20	283.70	3,010.1	55.5	-267.1	-26.1	0.95	0.63	-5.89
3,125.0	7.00	286.20	3,105.4	58.6	-278.6	-27.9	0.38	-0.21	2.60
3,220.0	7.30	290.70	3,199.6	62.4	-289.8	-30.4	0.67	0.32	4.74
3,316.0	6.60	292.70	3,294.9	66.6	-300.6	-33.5	0.77	-0.73	2.08
3,411.0	7.60	291.30	3,389.2	71.0	-311.4	-36.7	1.07	1.05	-1.47
3,507.0	8.70	291.10	3,484.2	75.9	-324.1	-40.2	1.15	1.15	-0.21
3,602.0	9.60	288.30	3,578.0	81.0	-338.4	-43.7	1.06	0.95	-2.95
3,697.0	9.00	289.80	3,671.8	86.0	-352.9	-47.0	0.68	-0.63	1.58
3,793.0	7.40	284.10	3,766.8	90.1	-365.9	-49.6	1.87	-1.67	-5.94
3,888.0	7.10	276.90	3,861.0	92.3	-377.7	-50.5	1.01	-0.32	-7.58
3,983.0	7.20	276.90	3,955.3	93.7	-389.4	-50.7	0.11	0.11	0.00
4,078.0	6.90	276.60	4,049.6	95.1	-401.0	-50.8	0.32	-0.32	-0.32
4,173.0	7.10	276.40	4,143.9	96.4	-412.5	-50.8	0.21	0.21	-0.21
4,268.0	6.50	276.70	4,238.2	97.7	-423.7	-50.9	0.63	-0.63	0.32
4,363.0	6.30	278.10	4,332.6	99.0	-434.2	-51.1	0.27	-0.21	1.47
4,458.0	5.80	281.90	4,427.1	100.7	-444.1	-51.7	0.67	-0.53	4.00
4,553.0	5.70	284.30	4,521.6	102.9	-453.3	-52.9	0.27	-0.11	2.53
4,648.0	4.60	287.10	4,616.2	105.2	-461.5	-54.2	1.19	-1.16	2.95
4,743.0	3.40	290.20	4,711.0	107.3	-467.8	-55.6	1.28	-1.26	3.26
4,838.0	2.40	287.80	4,805.9	108.9	-472.4	-56.7	1.06	-1.05	-2.53
4,933.0	1.40	277.90	4,900.8	109.6	-475.4	-57.1	1.10	-1.05	-10.42
5,029.0	0.80	256.30	4,996.8	109.6	-477.2	-57.0	0.75	-0.63	-22.50
5,123.0	0.90	245.50	5,090.8	109.2	-478.5	-56.4	0.20	0.11	-11.49
5,218.0	1.00	232.90	5,185.8	108.4	-479.9	-55.4	0.24	0.11	-13.26
5,313.0	0.40	241.60	5,280.8	107.7	-480.8	-54.6	0.64	-0.63	9.16
5,408.0	0.20	294.10	5,375.8	107.6	-481.3	-54.5	0.34	-0.21	55.26
5,502.0	0.40	245.20	5,469.7	107.5	-481.7	-54.4	0.33	0.21	-52.02
5,597.0	0.40	240.40	5,564.7	107.2	-482.3	-54.0	0.04	0.00	-5.05
5,692.0	0.40	247.10	5,659.7	106.9	-482.9	-53.7	0.05	0.00	7.05
5,787.0	0.20	213.40	5,754.7	106.7	-483.3	-53.4	0.27	-0.21	-35.47

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<b>Site:</b>	Riteaway NW-32 Pad Sec.32-T5N-R67W	<b>MD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Well:</b>	Riteaway 32J-103	<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>	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)
5,882.0	0.80	167.00	5,849.7	105.9	-483.2	-52.6	0.71	0.63	-48.84
5,920.0	1.10	157.40	5,887.7	105.3	-483.0	-52.0	0.89	0.79	-25.26
5,952.0	1.30	171.20	5,919.7	104.6	-482.9	-51.4	1.09	0.63	43.13
5,983.0	2.50	175.00	5,950.7	103.6	-482.7	-50.4	3.89	3.87	12.26
6,015.0	5.30	173.80	5,982.6	101.5	-482.5	-48.3	8.75	8.75	-3.75
6,047.0	8.40	174.80	6,014.4	97.7	-482.1	-44.5	9.69	9.69	3.13
6,078.0	11.00	174.60	6,045.0	92.5	-481.7	-39.4	8.39	8.39	-0.65
6,109.0	12.90	174.10	6,075.3	86.1	-481.0	-33.1	6.14	6.13	-1.61
6,141.0	14.90	176.90	6,106.3	78.4	-480.4	-25.6	6.59	6.25	8.75
6,172.0	16.80	176.90	6,136.2	70.0	-480.0	-17.2	6.13	6.13	0.00
6,204.0	18.50	177.20	6,166.7	60.3	-479.5	-7.6	5.32	5.31	0.94
6,235.0	20.50	177.50	6,195.9	49.9	-479.0	2.6	6.46	6.45	0.97
6,267.0	22.70	177.70	6,225.6	38.2	-478.5	14.2	6.88	6.88	0.63
6,298.0	25.70	178.10	6,253.9	25.5	-478.1	26.8	9.69	9.68	1.29
6,330.0	28.90	178.00	6,282.3	10.8	-477.6	41.3	10.00	10.00	-0.31
6,361.0	32.10	178.00	6,309.0	-4.9	-477.0	56.9	10.32	10.32	0.00
6,393.0	34.90	177.80	6,335.7	-22.6	-476.4	74.4	8.76	8.75	-0.63
6,425.0	37.80	177.00	6,361.5	-41.5	-475.5	93.1	9.18	9.06	-2.50
6,456.0	40.50	177.20	6,385.5	-61.1	-474.5	112.4	8.72	8.71	0.65
6,488.0	42.90	176.40	6,409.4	-82.3	-473.3	133.4	7.68	7.50	-2.50
6,519.0	45.20	176.10	6,431.7	-103.8	-471.9	154.6	7.45	7.42	-0.97
6,551.0	47.00	175.80	6,453.9	-126.8	-470.3	177.3	5.67	5.63	-0.94
6,582.0	48.60	175.70	6,474.7	-149.7	-468.6	199.9	5.17	5.16	-0.32
6,612.0	50.60	175.90	6,494.2	-172.5	-466.9	222.4	6.69	6.67	0.67
6,643.0	52.70	176.20	6,513.4	-196.8	-465.2	246.3	6.82	6.77	0.97
6,674.0	55.10	176.70	6,531.6	-221.8	-463.7	271.0	7.85	7.74	1.61
6,704.0	57.10	177.90	6,548.4	-246.6	-462.5	295.6	7.45	6.67	4.00
6,735.0	58.90	178.10	6,564.8	-272.9	-461.6	321.6	5.83	5.81	0.65
6,765.0	60.60	177.90	6,579.9	-298.8	-460.7	347.2	5.70	5.67	-0.67
6,796.0	61.90	178.20	6,594.8	-326.0	-459.8	374.1	4.28	4.19	0.97
6,826.0	63.60	178.30	6,608.6	-352.6	-458.9	400.5	5.67	5.67	0.33
6,856.0	65.60	177.90	6,621.4	-379.7	-458.0	427.4	6.77	6.67	-1.33
6,887.0	67.90	178.00	6,633.7	-408.2	-457.0	455.5	7.43	7.42	0.32
6,917.0	69.60	177.90	6,644.5	-436.1	-456.0	483.2	5.68	5.67	-0.33
6,948.0	71.90	178.00	6,654.8	-465.3	-455.0	512.2	7.43	7.42	0.32
6,979.0	74.50	178.20	6,663.7	-495.0	-454.0	541.5	8.41	8.39	0.65
7,009.0	76.90	177.90	6,671.1	-524.1	-453.0	570.3	8.06	8.00	-1.00
7,039.0	79.10	177.70	6,677.4	-553.4	-451.9	599.3	7.36	7.33	-0.67
7,070.0	81.80	177.10	6,682.5	-583.9	-450.5	629.5	8.92	8.71	-1.94
7,100.0	84.80	176.80	6,686.0	-613.7	-448.9	658.9	10.05	10.00	-1.00
7,179.0	88.70	175.30	6,690.5	-692.3	-443.5	736.5	5.29	4.94	-1.90
7,211.0	89.50	176.20	6,691.0	-724.2	-441.1	768.0	3.76	2.50	2.81
7,243.0	89.80	176.10	6,691.2	-756.2	-439.0	799.5	0.99	0.94	-0.31
7,274.0	89.60	176.10	6,691.4	-787.1	-436.8	830.0	0.65	-0.65	0.00
7,306.0	90.10	176.60	6,691.4	-819.0	-434.8	861.5	2.21	1.56	1.56
7,338.0	91.70	177.50	6,690.9	-851.0	-433.2	893.1	5.74	5.00	2.81
7,369.0	91.70	178.10	6,690.0	-881.9	-432.0	923.8	1.93	0.00	1.94
7,401.0	91.90	177.90	6,689.0	-913.9	-430.9	955.4	0.88	0.63	-0.63
7,433.0	92.40	177.70	6,687.8	-945.9	-429.6	987.1	1.68	1.56	-0.63
7,465.0	91.00	177.10	6,686.9	-977.8	-428.2	1,018.7	4.76	-4.38	-1.88
7,496.0	89.90	176.80	6,686.6	-1,008.8	-426.5	1,049.2	3.68	-3.55	-0.97
7,528.0	89.70	176.60	6,686.7	-1,040.7	-424.7	1,080.8	0.88	-0.63	-0.63
7,560.0	91.00	178.80	6,686.5	-1,072.7	-423.4	1,112.4	7.99	4.06	6.88

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<b>Well:</b>	Riteaway 32J-103	<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>	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)
7,591.0	90.20	178.10	6,686.2	-1,103.7	-422.6	1,143.2	3.43	-2.58	-2.26
7,623.0	90.00	177.80	6,686.1	-1,135.7	-421.4	1,174.8	1.13	-0.63	-0.94
7,655.0	90.40	178.00	6,686.0	-1,167.6	-420.2	1,206.5	1.40	1.25	0.63
7,687.0	90.10	178.50	6,685.9	-1,199.6	-419.3	1,238.2	1.82	-0.94	1.56
7,718.0	90.40	179.40	6,685.8	-1,230.6	-418.7	1,268.9	3.06	0.97	2.90
7,750.0	90.30	179.80	6,685.6	-1,262.6	-418.5	1,300.7	1.29	-0.31	1.25
7,782.0	90.00	180.10	6,685.5	-1,294.6	-418.4	1,332.5	1.33	-0.94	0.94
7,813.0	90.20	180.20	6,685.4	-1,325.6	-418.5	1,363.3	0.72	0.65	0.32
7,845.0	90.20	181.20	6,685.3	-1,357.6	-418.9	1,395.2	3.12	0.00	3.13
7,877.0	89.90	181.60	6,685.3	-1,389.6	-419.7	1,427.1	1.56	-0.94	1.25
7,909.0	90.00	182.30	6,685.3	-1,421.6	-420.8	1,459.0	2.21	0.31	2.19
7,941.0	90.40	181.70	6,685.2	-1,453.6	-421.9	1,490.9	2.25	1.25	-1.88
7,972.0	89.20	180.70	6,685.3	-1,484.5	-422.6	1,521.8	5.04	-3.87	-3.23
8,004.0	90.20	181.30	6,685.5	-1,516.5	-423.1	1,553.6	3.64	3.13	1.88
8,036.0	90.90	181.70	6,685.2	-1,548.5	-424.0	1,585.5	2.52	2.19	1.25
8,068.0	90.90	181.80	6,684.7	-1,580.5	-424.9	1,617.4	0.31	0.00	0.31
8,099.0	91.00	182.10	6,684.2	-1,611.5	-426.0	1,648.3	1.02	0.32	0.97
8,131.0	91.00	181.30	6,683.6	-1,643.5	-426.9	1,680.2	2.50	0.00	-2.50
8,163.0	91.80	181.70	6,682.8	-1,675.4	-427.8	1,712.1	2.79	2.50	1.25
8,194.0	91.90	181.70	6,681.8	-1,706.4	-428.7	1,743.0	0.32	0.32	0.00
8,226.0	92.10	181.50	6,680.7	-1,738.4	-429.6	1,774.9	0.88	0.63	-0.63
8,258.0	92.70	181.60	6,679.4	-1,770.3	-430.4	1,806.7	1.90	1.88	0.31
8,290.0	92.00	181.20	6,678.0	-1,802.3	-431.2	1,838.6	2.52	-2.19	-1.25
8,321.0	91.90	180.80	6,677.0	-1,833.3	-431.8	1,869.4	1.33	-0.32	-1.29
8,353.0	91.40	181.30	6,676.1	-1,865.3	-432.4	1,901.3	2.21	-1.56	1.56
8,385.0	91.40	181.60	6,675.3	-1,897.2	-433.2	1,933.2	0.94	0.00	0.94
8,416.0	91.30	181.40	6,674.6	-1,928.2	-434.0	1,964.0	0.72	-0.32	-0.65
8,448.0	91.30	181.10	6,673.8	-1,960.2	-434.7	1,995.9	0.94	0.00	-0.94
8,480.0	91.40	181.20	6,673.1	-1,992.2	-435.3	2,027.8	0.44	0.31	0.31
8,512.0	91.40	181.00	6,672.3	-2,024.2	-435.9	2,059.6	0.62	0.00	-0.63
8,543.0	91.30	181.80	6,671.6	-2,055.2	-436.7	2,090.5	2.60	-0.32	2.58
8,575.0	90.90	181.50	6,671.0	-2,087.1	-437.6	2,122.4	1.56	-1.25	-0.94
8,607.0	88.70	180.80	6,671.1	-2,119.1	-438.3	2,154.3	7.21	-6.88	-2.19
8,638.0	89.40	181.60	6,671.6	-2,150.1	-438.9	2,185.2	3.43	2.26	2.58
8,670.0	90.20	181.10	6,671.7	-2,182.1	-439.7	2,217.0	2.95	2.50	-1.56
8,702.0	91.20	181.70	6,671.3	-2,214.1	-440.4	2,248.9	3.64	3.13	1.88
8,733.0	91.00	181.30	6,670.7	-2,245.1	-441.2	2,279.8	1.44	-0.65	-1.29
8,765.0	90.90	180.80	6,670.2	-2,277.1	-441.8	2,311.7	1.59	-0.31	-1.56
8,797.0	91.10	181.10	6,669.6	-2,309.1	-442.4	2,343.5	1.13	0.63	0.94
8,829.0	90.70	179.90	6,669.1	-2,341.1	-442.6	2,375.4	3.95	-1.25	-3.75
8,860.0	90.70	180.30	6,668.7	-2,372.1	-442.7	2,406.2	1.29	0.00	1.29
8,892.0	90.50	179.70	6,668.4	-2,404.1	-442.7	2,438.0	1.98	-0.63	-1.88
8,924.0	90.90	179.80	6,668.0	-2,436.1	-442.6	2,469.8	1.29	1.25	0.31
8,955.0	90.30	179.60	6,667.7	-2,467.1	-442.4	2,500.6	2.04	-1.94	-0.65
8,987.0	91.20	180.80	6,667.3	-2,499.0	-442.5	2,532.4	4.69	2.81	3.75
9,019.0	90.60	180.50	6,666.8	-2,531.0	-442.9	2,564.2	2.10	-1.88	-0.94
9,051.0	89.60	178.90	6,666.7	-2,563.0	-442.7	2,596.0	5.90	-3.13	-5.00
9,082.0	90.20	180.20	6,666.8	-2,594.0	-442.5	2,626.8	4.62	1.94	4.19
9,114.0	90.90	180.60	6,666.5	-2,626.0	-442.7	2,658.6	2.52	2.19	1.25
9,146.0	90.20	179.80	6,666.1	-2,658.0	-442.8	2,690.5	3.32	-2.19	-2.50
9,178.0	89.60	178.90	6,666.2	-2,690.0	-442.4	2,722.2	3.38	-1.88	-2.81
9,210.0	90.60	180.40	6,666.1	-2,722.0	-442.2	2,754.0	5.63	3.13	4.69
9,242.0	90.20	180.30	6,665.9	-2,754.0	-442.4	2,785.8	1.29	-1.25	-0.31

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Riteaway 32J-103
<b>Project:</b>	SEC.32-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Site:</b>	Riteaway NW-32 Pad Sec.32-T5N-R67W	<b>MD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Well:</b>	Riteaway 32J-103	<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>	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)
9,274.0	89.90	180.50	6,665.9	-2,786.0	-442.7	2,817.7	1.13	-0.94	0.63
9,305.0	90.20	181.00	6,665.9	-2,817.0	-443.1	2,848.5	1.88	0.97	1.61
9,337.0	90.40	182.40	6,665.7	-2,849.0	-444.0	2,880.4	4.42	0.63	4.38
9,369.0	90.30	181.80	6,665.5	-2,881.0	-445.2	2,912.3	1.90	-0.31	-1.88
9,400.0	90.10	184.60	6,665.4	-2,911.9	-446.9	2,943.3	9.06	-0.65	9.03
9,432.0	90.20	186.20	6,665.3	-2,943.8	-449.9	2,975.3	5.01	0.31	5.00
9,464.0	89.90	186.90	6,665.3	-2,975.6	-453.6	3,007.3	2.38	-0.94	2.19
9,496.0	90.00	187.30	6,665.3	-3,007.3	-457.5	3,039.3	1.29	0.31	1.25
9,527.0	90.00	188.80	6,665.3	-3,038.0	-461.9	3,070.3	4.84	0.00	4.84
9,559.0	90.10	188.70	6,665.3	-3,069.7	-466.7	3,102.2	0.44	0.31	-0.31
9,591.0	90.20	188.20	6,665.2	-3,101.3	-471.4	3,134.2	1.59	0.31	-1.56
9,622.0	90.80	187.80	6,664.9	-3,132.0	-475.8	3,165.2	2.33	1.94	-1.29
9,654.0	90.70	188.00	6,664.5	-3,163.7	-480.2	3,197.2	0.70	-0.31	0.63
9,686.0	90.70	187.60	6,664.1	-3,195.4	-484.5	3,229.2	1.25	0.00	-1.25
9,717.0	90.80	186.70	6,663.7	-3,226.2	-488.4	3,260.2	2.92	0.32	-2.90
9,749.0	90.10	183.80	6,663.5	-3,258.0	-491.3	3,292.2	9.32	-2.19	-9.06
9,781.0	90.00	182.20	6,663.4	-3,290.0	-493.0	3,324.1	5.01	-0.31	-5.00
9,813.0	90.80	182.40	6,663.2	-3,321.9	-494.2	3,356.0	2.58	2.50	0.63
9,844.0	90.00	179.60	6,663.0	-3,352.9	-494.8	3,386.9	9.39	-2.58	-9.03
9,876.0	90.10	179.30	6,663.0	-3,384.9	-494.5	3,418.7	0.99	0.31	-0.94
9,908.0	90.60	180.70	6,662.8	-3,416.9	-494.5	3,450.5	4.65	1.56	4.38
9,939.0	90.40	179.90	6,662.5	-3,447.9	-494.6	3,481.3	2.66	-0.65	-2.58
9,971.0	89.50	178.80	6,662.5	-3,479.9	-494.3	3,513.1	4.44	-2.81	-3.44
10,003.0	90.00	178.40	6,662.7	-3,511.9	-493.5	3,544.8	2.00	1.56	-1.25
10,035.0	90.90	179.00	6,662.4	-3,543.9	-492.8	3,576.5	3.38	2.81	1.88
10,067.0	90.90	178.90	6,661.9	-3,575.9	-492.2	3,608.2	0.31	0.00	-0.31
10,098.0	89.60	177.70	6,661.8	-3,606.9	-491.3	3,638.9	5.71	-4.19	-3.87
10,130.0	90.10	178.20	6,661.9	-3,638.9	-490.1	3,670.6	2.21	1.56	1.56
10,162.0	90.40	178.60	6,661.7	-3,670.9	-489.2	3,702.3	1.56	0.94	1.25
10,194.0	90.10	177.30	6,661.6	-3,702.8	-488.1	3,734.0	4.17	-0.94	-4.06
10,225.0	90.20	176.90	6,661.5	-3,733.8	-486.5	3,764.6	1.33	0.32	-1.29
10,257.0	90.40	177.90	6,661.3	-3,765.8	-485.1	3,796.2	3.19	0.63	3.13
10,289.0	90.60	178.60	6,661.1	-3,797.7	-484.1	3,827.9	2.27	0.63	2.19
10,320.0	90.10	177.00	6,660.9	-3,828.7	-482.9	3,858.5	5.41	-1.61	-5.16
10,352.0	89.80	176.40	6,660.9	-3,860.7	-481.0	3,890.1	2.10	-0.94	-1.88
10,384.0	90.40	178.40	6,660.8	-3,892.6	-479.6	3,921.7	6.53	1.88	6.25
10,416.0	90.20	178.90	6,660.7	-3,924.6	-478.8	3,953.4	1.68	-0.63	1.56
10,447.0	90.10	179.20	6,660.6	-3,956.6	-478.3	3,984.2	1.02	-0.32	0.97
10,479.0	90.40	180.80	6,660.5	-3,987.6	-478.3	4,016.0	5.09	0.94	5.00
10,511.0	90.20	181.40	6,660.3	-4,019.6	-478.9	4,047.9	1.98	-0.63	1.88
10,542.0	90.40	183.10	6,660.1	-4,050.6	-480.2	4,078.8	5.52	0.65	5.48
10,574.0	90.40	184.10	6,659.9	-4,082.5	-482.2	4,110.7	3.12	0.00	3.13
10,606.0	90.30	185.30	6,659.7	-4,114.4	-484.8	4,142.7	3.76	-0.31	3.75
10,638.0	90.10	186.00	6,659.6	-4,146.3	-487.9	4,174.7	2.28	-0.63	2.19
10,669.0	90.10	187.00	6,659.5	-4,177.1	-491.4	4,205.7	3.23	0.00	3.23
10,701.0	89.40	187.60	6,659.7	-4,208.8	-495.5	4,237.7	2.88	-2.19	1.88
10,733.0	89.30	188.10	6,660.0	-4,240.5	-499.9	4,269.7	1.59	-0.31	1.56
10,764.0	89.90	188.90	6,660.3	-4,271.1	-504.5	4,300.7	3.23	1.94	2.58
10,796.0	89.90	188.80	6,660.3	-4,302.8	-509.4	4,332.7	0.31	0.00	-0.31
10,828.0	89.90	188.10	6,660.4	-4,334.4	-514.1	4,364.6	2.19	0.00	-2.19
10,860.0	90.00	186.90	6,660.4	-4,366.1	-518.3	4,396.6	3.76	0.31	-3.75
10,891.0	90.10	185.80	6,660.4	-4,397.0	-521.7	4,427.6	3.56	0.32	-3.55
10,938.6	90.10	185.80	6,660.3	-4,444.3	-526.5	4,475.2	0.00	0.00	0.00



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Riteaway 32J-103
<b>Project:</b>	SEC.32-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Site:</b>	Riteaway NW-32 Pad Sec.32-T5N-R67W	<b>MD Reference:</b>	WELL @ 4810.0ft (Original Well Elev)
<b>Well:</b>	Riteaway 32J-103	<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>	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)
BHL 500'FSL, 1320'FWL									
10,940.0	90.10	185.80	6,660.3	-4,445.7	-526.6	4,476.6	0.00	0.00	0.00

Wellbore Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SECTION LINE 292'N	0.00	0.00	1.0	292.0	100.0	1,375,767.62	3,161,682.97	40.363431	-104.919781
- survey misses target center by 308.6ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,375,767.62	3,161,682.97		
Point 2			1.0	0.0	-700.0	1,375,763.04	3,160,983.02		
HARD LINE SHL 460'	0.00	0.00	1.0	-167.0	100.0	1,375,308.65	3,161,685.97	40.362172	-104.919781
- survey misses target center by 194.7ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,375,308.65	3,161,685.97		
Point 2			1.0	0.0	-700.0	1,375,304.07	3,160,986.02		
HARD LINE BHL 460'	0.00	0.00	1.0	-4,488.2	100.0	1,370,987.73	3,161,714.23	40.350310	-104.919781
- survey misses target center by 4489.3ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,370,987.73	3,161,714.23		
Point 2			1.0	0.0	-700.0	1,370,983.15	3,161,014.27		
BHL 500'FSL, 1320'FWL	0.00	0.00	6,654.0	-4,448.2	-487.8	1,371,023.88	3,161,126.23	40.350420	-104.921890
- survey misses target center by 39.4ft at 10938.6ft MD (6660.3 TVD, -4444.3 N, -526.5 E)									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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