

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Wiedeman 28E-404**

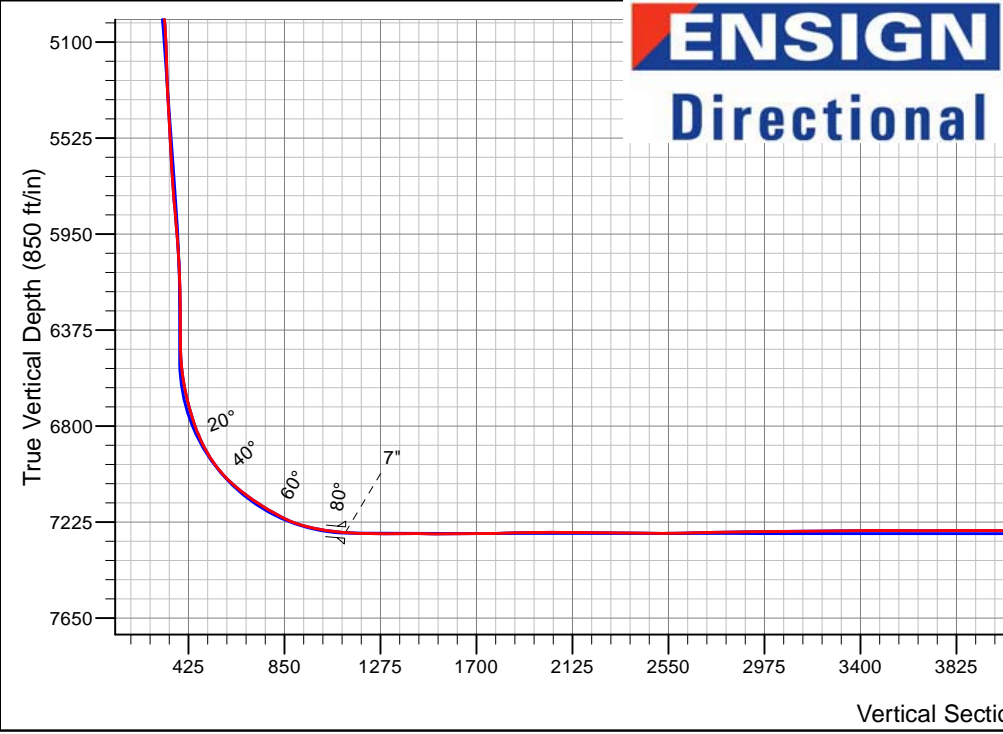
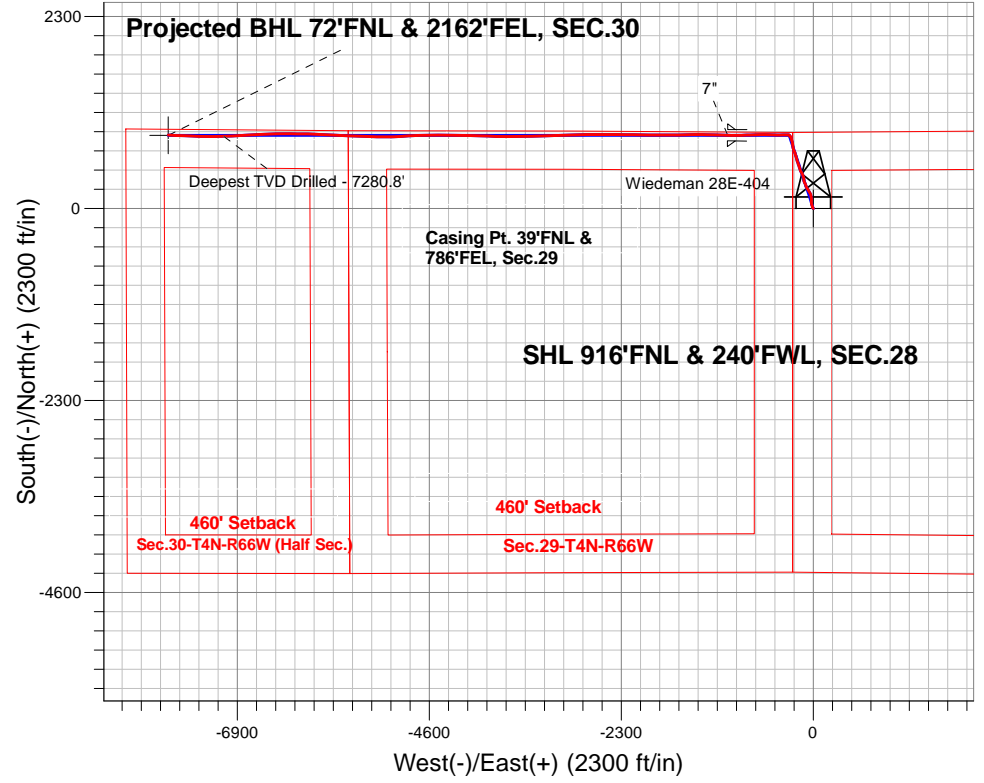
Surface Location: Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4763.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.01348306	143197775.96	40.287330	-104.791050		

Original Well Elev WELL @ 4778.0ft (Original Well Elev)

FINAL SURVEY

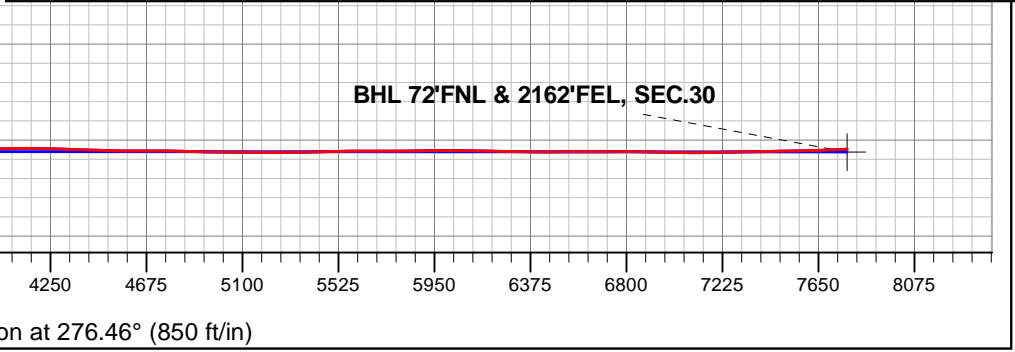
Projected Bottom Hole Location
 14459'MD 7266'TVD 879'N & 7727'W of SHL
 92.6 degree Incl @ 272.7 degree AZM



Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W
 Wiedeman 28E-404
 Wellbore #1
 9:50, August 24 2015

ANNOTATIONS		
TVD	MD	Annotation
7280.813792.0		Deepest TVD Drilled - 7280.8'

LEGEND	
	Wiedeman 28E-404, Wellbore #1, Plan #2 (7-23-15) V0
	Wellbore #1
	Survey #1





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R66W

Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W

Wiedeman 28E-404

Wellbore #1

Survey: Survey #1

Standard Survey Report

24 August, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Well:	Wiedeman 28E-404	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Project	SEC.28-T4N-R66W, 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	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W				
Site Position:		Northing:	1,348,277.01 usft	Latitude:	40.287250
From:	Lat/Long	Easting:	3,197,776.20 usft	Longitude:	-104.791050
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	Wiedeman 28E-404					
Well Position	+N/-S	0.0 ft	Northing:	1,348,306.14 usft	Latitude:	40.287330
	+E/-W	0.0 ft	Easting:	3,197,775.96 usft	Longitude:	-104.791050
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,763.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/3/2015	8.31	66.81	52,635

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		276.46

Survey Program	Date	8/24/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
73.0	14,459.0	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	0.00
100.0	0.59	295.18	100.0	0.2	-0.5	0.6	0.59	0.59	0.00	0.00
200.0	1.10	306.19	200.0	0.9	-1.7	1.8	0.54	0.51	11.01	11.01
300.0	2.02	323.71	300.0	2.8	-3.6	3.9	1.02	0.92	17.51	17.51
400.0	2.86	333.71	399.9	6.6	-5.8	6.5	0.94	0.85	10.01	10.01
500.0	3.87	336.01	499.7	11.7	-8.2	9.4	1.01	1.00	2.30	2.30
600.0	5.10	345.12	599.4	19.1	-10.9	13.0	1.42	1.23	9.11	9.11
700.0	5.94	347.02	698.9	28.6	-13.0	16.2	0.86	0.84	1.91	1.91
800.0	6.42	343.51	798.3	39.0	-15.7	20.0	0.61	0.48	-3.51	-3.51

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Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Well:	Wiedeman 28E-404	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)	
900.0	7.10	345.63	897.6	50.4	-18.9	24.4	0.72	0.68	2.12	
1,000.0	7.66	345.98	996.8	62.8	-22.0	29.0	0.57	0.56	0.34	
1,100.0	10.57	359.10	1,095.6	78.3	-23.9	32.6	3.56	2.91	13.12	
1,200.0	10.30	359.90	1,193.9	96.3	-24.0	34.7	0.30	-0.27	0.80	
1,300.0	13.99	358.93	1,291.6	117.5	-24.1	37.2	3.70	3.69	-0.97	
1,400.0	15.18	351.22	1,388.3	142.9	-26.3	42.2	2.27	1.18	-7.71	
1,500.0	14.41	339.87	1,485.0	167.5	-32.4	51.1	2.99	-0.76	-11.35	
1,600.0	14.67	330.63	1,581.8	190.0	-43.5	64.6	2.33	0.25	-9.24	
1,700.0	14.39	330.09	1,678.6	211.9	-55.9	79.4	0.31	-0.28	-0.54	
1,800.0	12.97	327.76	1,775.7	232.6	-68.2	94.0	1.53	-1.42	-2.33	
1,900.0	10.38	330.55	1,873.6	249.7	-79.2	106.8	2.65	-2.59	2.78	
2,000.0	9.04	339.58	1,972.2	264.6	-86.0	115.2	2.02	-1.33	9.03	
2,100.0	8.64	340.82	2,071.0	279.2	-90.9	121.7	0.45	-0.41	1.24	
2,200.0	8.08	337.61	2,170.0	292.8	-96.0	128.4	0.73	-0.56	-3.21	
2,300.0	7.67	334.80	2,269.0	305.3	-101.5	135.3	0.56	-0.40	-2.81	
2,400.0	7.34	341.82	2,368.2	317.3	-106.6	141.7	0.97	-0.33	7.02	
2,500.0	7.13	340.21	2,467.4	329.3	-110.5	146.8	0.30	-0.22	-1.61	
2,600.0	7.49	1.99	2,566.6	341.5	-112.7	150.5	2.78	0.36	21.78	
2,700.0	9.46	349.58	2,665.5	356.0	-113.6	152.9	2.68	1.97	-12.41	
2,800.0	9.50	348.31	2,764.1	372.3	-116.8	158.0	0.21	0.04	-1.27	
2,900.0	9.59	336.47	2,862.8	388.0	-121.9	164.8	1.96	0.09	-11.83	
3,000.0	9.18	335.53	2,961.4	402.9	-128.5	173.0	0.43	-0.40	-0.95	
3,100.0	8.99	334.50	3,060.2	417.2	-135.2	181.3	0.26	-0.20	-1.03	
3,200.0	8.81	332.77	3,158.9	431.1	-142.0	189.7	0.32	-0.18	-1.73	
3,300.0	8.28	331.77	3,257.8	444.2	-149.1	198.1	0.55	-0.53	-1.00	
3,400.0	8.02	337.91	3,356.9	456.8	-155.1	205.6	0.91	-0.26	6.14	
3,500.0	8.95	342.54	3,455.8	470.6	-159.7	211.7	1.15	0.93	4.62	
3,600.0	9.88	340.50	3,554.4	486.5	-165.2	218.9	0.99	0.93	-2.04	
3,700.0	9.12	340.38	3,653.0	502.1	-170.7	226.1	0.75	-0.75	-0.12	
3,800.0	8.36	341.99	3,751.8	516.4	-175.7	232.7	0.80	-0.76	1.61	
3,900.0	8.82	342.92	3,850.8	530.3	-179.9	238.4	0.48	0.46	0.93	
4,000.0	9.95	341.84	3,949.4	545.9	-184.9	245.2	1.14	1.13	-1.08	
4,100.0	9.75	340.74	4,047.9	562.5	-190.5	252.6	0.28	-0.20	-1.10	
4,200.0	8.92	344.60	4,146.6	577.8	-195.6	259.4	1.04	-0.82	3.86	
4,300.0	9.47	343.77	4,245.3	593.0	-199.5	265.0	0.56	0.54	-0.83	
4,400.0	10.25	345.04	4,343.8	609.5	-204.3	271.7	0.81	0.78	1.26	
4,500.0	10.32	344.44	4,442.2	626.9	-208.9	278.2	0.13	0.07	-0.60	
4,600.0	10.04	343.93	4,540.6	643.9	-213.8	284.9	0.29	-0.27	-0.51	
4,700.0	9.73	344.17	4,639.1	660.4	-218.5	291.5	0.32	-0.32	0.24	
4,800.0	10.64	337.06	4,737.6	677.0	-224.3	299.1	1.55	0.92	-7.12	
4,900.0	9.80	334.49	4,836.0	693.2	-231.6	308.2	0.96	-0.85	-2.57	
5,000.0	9.51	343.35	4,934.6	708.8	-237.7	316.0	1.51	-0.28	8.87	

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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)
5,100.0	9.71	351.08	5,033.2	725.1	-241.2	321.3	1.31	0.20	7.73
5,200.0	8.84	349.71	5,131.8	741.0	-244.1	326.0	0.90	-0.88	-1.37
5,300.0	8.35	357.06	5,230.8	755.6	-245.4	328.9	1.20	-0.49	7.35
5,400.0	9.40	349.07	5,329.5	771.0	-247.5	332.7	1.62	1.05	-7.99
5,500.0	9.73	347.43	5,428.2	787.1	-251.0	338.0	0.43	0.33	-1.64
5,600.0	10.01	347.68	5,526.6	804.3	-254.7	343.6	0.28	0.28	0.25
5,700.0	9.22	346.55	5,625.3	820.3	-258.3	349.0	0.82	-0.79	-1.13
5,800.0	9.37	341.52	5,723.9	835.9	-262.5	355.0	0.83	0.15	-5.02
5,900.0	8.78	332.67	5,822.6	850.7	-268.8	362.9	1.51	-0.59	-8.85
6,000.0	6.96	322.61	5,921.7	862.5	-276.1	371.5	2.28	-1.83	-10.06
6,100.0	5.17	318.15	6,021.1	870.3	-283.1	379.2	1.85	-1.79	-4.46
6,200.0	3.40	320.70	6,120.8	876.1	-288.0	384.8	1.77	-1.76	2.55
6,300.0	1.19	314.25	6,220.7	879.2	-290.6	387.7	2.23	-2.21	-6.45
6,400.0	0.43	297.76	6,320.7	879.7	-291.4	388.6	0.79	-0.76	-16.49
6,500.0	0.40	312.37	6,420.7	880.1	-292.0	389.2	0.11	-0.03	14.61
6,600.0	4.63	273.96	6,520.6	880.6	-295.5	392.8	4.33	4.24	-38.41
6,700.0	10.63	268.89	6,619.7	880.8	-308.7	405.9	6.03	5.99	-5.07
6,800.0	15.29	271.15	6,717.1	880.8	-331.3	428.3	4.69	4.66	2.26
6,900.0	20.49	268.15	6,812.3	880.6	-361.9	458.7	5.29	5.21	-3.00
7,000.0	28.30	268.28	6,903.3	879.2	-403.1	499.5	7.81	7.81	0.13
7,100.0	38.44	272.55	6,986.7	880.0	-458.0	554.1	10.40	10.14	4.27
7,200.0	48.55	272.59	7,058.9	883.4	-526.8	622.9	10.11	10.11	0.04
7,300.0	55.24	269.47	7,120.4	884.7	-605.7	701.4	7.12	6.68	-3.12
7,400.0	59.83	267.28	7,174.1	881.8	-689.9	784.8	4.94	4.59	-2.18
7,500.0	67.06	268.29	7,219.9	878.3	-778.7	872.6	7.29	7.24	1.01
7,600.0	77.31	270.13	7,249.2	876.7	-874.1	967.2	10.40	10.25	1.83
7,700.0	83.19	269.78	7,266.5	877.1	-972.6	1,065.1	5.89	5.88	-0.34
7,754.0	85.89	270.02	7,271.4	876.9	-1,026.3	1,118.5	5.01	4.99	0.43
7"									
7,800.0	87.40	270.80	7,274.1	877.2	-1,072.2	1,164.2	3.71	3.29	1.71
7,900.0	89.76	272.06	7,276.0	880.0	-1,172.2	1,263.8	2.68	2.36	1.26
8,000.0	89.68	271.61	7,276.3	883.6	-1,272.1	1,363.5	0.46	-0.08	-0.45
8,100.0	89.67	270.19	7,277.2	885.0	-1,372.1	1,463.0	1.42	-0.01	-1.42
8,200.0	90.43	269.81	7,277.1	884.7	-1,472.1	1,562.3	0.85	0.76	-0.38
8,300.0	90.58	268.47	7,276.0	883.8	-1,572.1	1,661.6	1.35	0.15	-1.34
8,400.0	90.57	267.11	7,275.1	879.6	-1,672.0	1,760.4	1.36	0.00	-1.36
8,500.0	91.79	269.68	7,273.3	876.0	-1,771.9	1,859.2	2.85	1.22	2.57
8,600.0	90.34	271.46	7,270.9	877.3	-1,871.8	1,958.7	2.30	-1.45	1.78
8,700.0	90.48	272.17	7,270.4	880.5	-1,971.8	2,058.4	0.73	0.14	0.72
8,800.0	88.83	270.86	7,271.0	883.2	-2,071.7	2,158.0	2.11	-1.65	-1.32
8,900.0	89.47	269.91	7,272.4	883.8	-2,171.7	2,257.4	1.14	0.64	-0.94
9,000.0	89.30	270.17	7,273.5	883.7	-2,271.7	2,356.8	0.31	-0.17	0.25

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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)	
9,100.0	89.56	270.80	7,274.7	884.7	-2,371.7	2,456.2	0.69	0.26	0.63	
9,200.0	90.24	270.46	7,274.7	886.0	-2,471.7	2,555.7	0.76	0.67	-0.34	
9,300.0	90.90	269.81	7,273.9	886.1	-2,571.7	2,655.1	0.93	0.66	-0.65	
9,400.0	91.60	269.21	7,271.5	885.4	-2,671.7	2,754.4	0.92	0.70	-0.60	
9,500.0	91.73	268.67	7,268.6	883.4	-2,771.6	2,853.4	0.55	0.13	-0.54	
9,600.0	90.15	268.03	7,266.4	880.7	-2,871.5	2,952.4	1.70	-1.58	-0.65	
9,700.0	90.14	268.04	7,266.7	877.0	-2,971.5	3,051.3	0.02	-0.01	0.01	
9,800.0	90.56	268.28	7,266.1	873.8	-3,071.4	3,150.3	0.49	0.43	0.24	
9,900.0	91.08	268.11	7,264.6	870.7	-3,171.4	3,249.2	0.55	0.52	-0.17	
10,000.0	90.95	268.35	7,262.8	867.6	-3,271.3	3,348.2	0.28	-0.14	0.24	
10,100.0	89.94	269.24	7,262.1	865.5	-3,371.3	3,447.3	1.34	-1.00	0.89	
10,200.0	89.63	269.50	7,262.6	864.5	-3,471.3	3,546.5	0.41	-0.32	0.26	
10,300.0	89.75	269.50	7,263.1	863.6	-3,571.3	3,645.8	0.13	0.13	0.00	
10,400.0	90.53	269.63	7,263.1	862.8	-3,671.2	3,745.0	0.79	0.78	0.13	
10,500.0	89.97	270.99	7,262.1	863.0	-3,771.2	3,844.4	1.47	-0.56	1.36	
10,600.0	89.90	271.73	7,262.6	865.7	-3,871.2	3,944.0	0.74	-0.07	0.74	
10,700.0	89.59	271.39	7,262.8	868.5	-3,971.2	4,043.7	0.45	-0.31	-0.33	
10,800.0	90.18	271.56	7,263.2	871.0	-4,071.1	4,143.3	0.61	0.59	0.16	
10,900.0	89.49	272.23	7,263.3	874.3	-4,171.1	4,243.0	0.97	-0.70	0.68	
11,000.0	87.39	271.15	7,266.0	877.3	-4,271.0	4,342.6	2.36	-2.10	-1.08	
11,100.0	88.00	270.40	7,270.1	878.7	-4,370.9	4,442.0	0.97	0.61	-0.75	
11,200.0	89.24	269.19	7,272.5	878.3	-4,470.9	4,541.3	1.73	1.24	-1.21	
11,300.0	90.02	269.02	7,273.1	876.7	-4,570.8	4,640.5	0.80	0.78	-0.17	
11,400.0	90.02	269.10	7,272.9	875.1	-4,670.8	4,739.7	0.08	0.00	0.08	
11,500.0	88.84	268.08	7,273.9	872.9	-4,770.8	4,838.7	1.56	-1.18	-1.01	
11,600.0	88.30	266.47	7,276.6	867.7	-4,870.6	4,937.3	1.70	-0.54	-1.61	
11,700.0	88.98	266.96	7,279.2	861.9	-4,970.4	5,035.9	0.84	0.68	0.49	
11,800.0	89.97	268.54	7,279.9	857.6	-5,070.3	5,134.6	1.86	0.99	1.58	
11,900.0	90.33	270.67	7,279.7	857.4	-5,170.3	5,234.0	2.16	0.37	2.13	
12,000.0	91.05	271.41	7,278.5	859.2	-5,270.3	5,333.5	1.03	0.72	0.73	
12,100.0	91.02	272.04	7,276.3	862.2	-5,370.2	5,433.1	0.64	-0.03	0.64	
12,200.0	90.82	272.78	7,275.1	866.4	-5,470.1	5,532.9	0.76	-0.20	0.74	
12,300.0	90.17	272.39	7,273.7	871.4	-5,570.0	5,632.7	0.75	-0.65	-0.39	
12,400.0	89.75	271.93	7,274.2	874.8	-5,669.9	5,732.4	0.63	-0.42	-0.46	
12,500.0	90.98	272.47	7,273.8	878.5	-5,769.8	5,832.1	1.34	1.23	0.55	
12,600.0	90.56	273.06	7,271.9	883.4	-5,869.7	5,931.8	0.73	-0.42	0.59	
12,700.0	90.05	272.97	7,271.6	888.8	-5,969.6	6,031.7	0.52	-0.51	-0.09	
12,800.0	88.85	271.01	7,272.4	892.6	-6,069.5	6,131.4	2.29	-1.20	-1.96	
12,900.0	88.60	269.65	7,274.8	893.0	-6,169.4	6,230.8	1.39	-0.25	-1.36	
13,000.0	89.24	269.96	7,276.7	892.5	-6,269.4	6,330.0	0.71	0.64	0.31	
13,100.0	90.26	270.19	7,277.2	892.6	-6,369.4	6,429.4	1.04	1.02	0.23	
13,200.0	90.00	269.29	7,276.9	892.2	-6,469.4	6,528.7	0.94	-0.26	-0.90	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Wiedeman 28E-404
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4778.0ft (Original Well Elev)
Site:	Wiedeman 4N66W28F - West Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4778.0ft (Original Well Elev)
Well:	Wiedeman 28E-404	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)	
13,300.0	90.12	268.23	7,276.8	890.1	-6,569.4	6,627.8	1.07	0.12	-1.06	
13,400.0	90.35	266.98	7,276.4	886.0	-6,669.3	6,726.7	1.27	0.23	-1.25	
13,500.0	89.75	265.45	7,276.1	879.0	-6,769.1	6,825.0	1.64	-0.61	-1.53	
13,600.0	88.57	266.29	7,277.9	871.9	-6,868.8	6,923.3	1.44	-1.18	0.84	
13,700.0	88.94	266.78	7,280.1	865.8	-6,968.6	7,021.8	0.62	0.37	0.49	
13,792.0	90.20	269.30	7,280.8	862.7	-7,060.5	7,112.7	3.06	1.37	2.74	
Deepest TVD Drilled - 7280.8'										
13,800.0	90.29	269.38	7,280.7	862.6	-7,068.5	7,120.7	1.50	1.16	0.95	
13,900.0	91.30	270.30	7,279.2	862.3	-7,168.5	7,220.0	1.36	1.01	0.92	
14,000.0	91.19	271.03	7,277.0	863.5	-7,268.5	7,319.5	0.74	-0.11	0.74	
14,100.0	90.75	271.65	7,275.4	865.9	-7,368.4	7,419.1	0.76	-0.44	0.62	
14,200.0	90.99	271.80	7,273.9	868.9	-7,468.4	7,518.7	0.28	0.24	0.15	
14,300.0	91.53	272.03	7,271.9	872.1	-7,568.3	7,618.4	0.60	0.55	0.23	
14,400.0	92.56	272.68	7,268.3	876.3	-7,668.1	7,718.0	1.21	1.03	0.65	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,754.0	7,271.4	7"	7	8-3/4	

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
13,792.0	7,280.8	862.7	-7,060.5	Deepest TVD Drilled - 7280.8'	

Checked By: _____ Approved By: _____ Date: _____