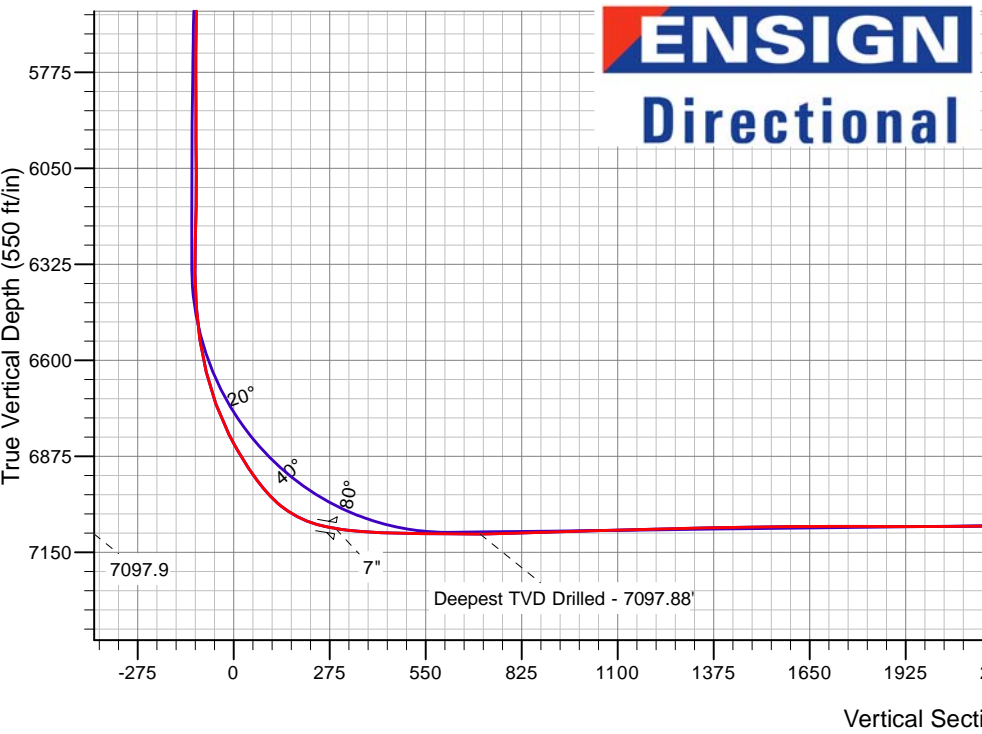
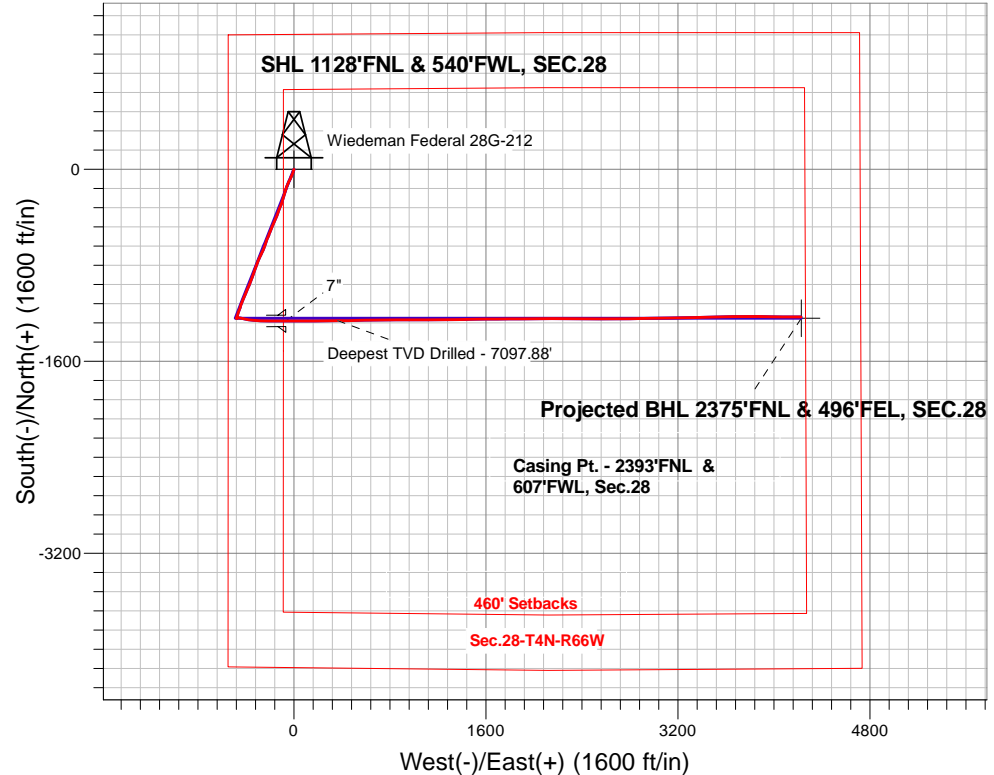


PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Wiedeman Federal 28G-212**
Surface Location: Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4761.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 348100.90 3198078.91 40.286760 -104.789970
Ensign Rig #134 RKB - 13'WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')

FINAL SURVEY

Projected Bottom Hole Location
11720'MD 7053'TVD 1232'S & 4225'E of SHL
90.0 degree Incl @ 90.2degree AZM

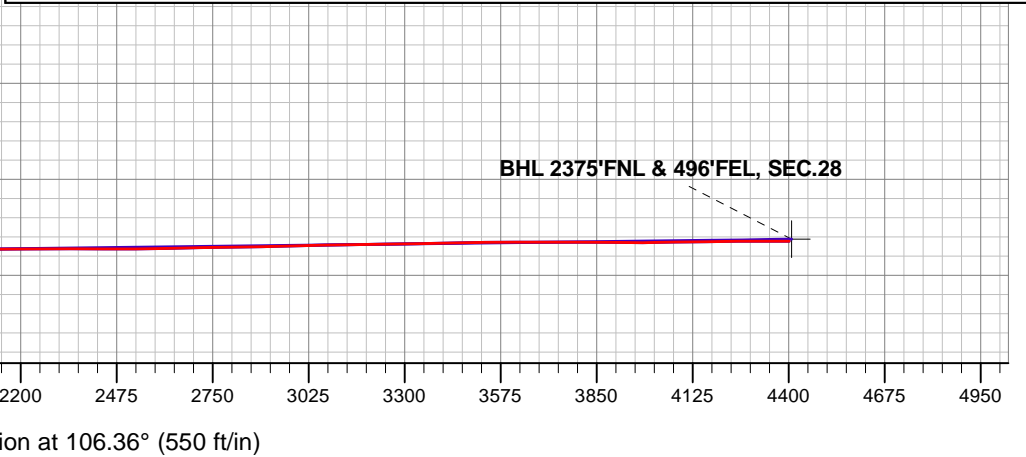


Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W
Wiedeman Federal 28G-212
Wellbore #1
12:05, November 30 2015

ANNOTATIONS		
TVD	MD	Annotation
7097.9	7859.0	Deepest TVD Drilled - 7097.88'

LEGEND

- Wiedeman Federal 28G-212, Wellbore #1, Plan #1 (11-15-15)R V0
- Wellbore #1
- Survey #1





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.28-T4N-R66W

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

Wiedeman Federal 28G-212

Wellbore #1

Survey: Survey #1

Standard Survey Report

30 November, 2015

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 28G-212
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Well:	Wiedeman Federal 28G-212	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 - East Pad Sec.28-T4N-R66W			
Site Position:		Northing:	1,348,308.56 usft	Latitude:	40.287330
From:	Lat/Long	Easting:	3,198,077.24 usft	Longitude:	-104.789970
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	Wiedeman Federal 28G-212					
Well Position	+N/-S	0.0 ft	Northing:	1,348,100.90 usft	Latitude:	40.286760
	+E/-W	0.0 ft	Easting:	3,198,078.91 usft	Longitude:	-104.789970
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,761.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/21/2015	8.29	66.81	52,620

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	106.36	

Survey Program	Date	11/30/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
166.0	11,720.0	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	
1.0	0.00	93.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 1128'FNL & 540'FWL, SEC.28										
166.0	0.10	93.00	166.0	0.0	0.1	0.1	0.06	0.06	0.00	
259.0	0.60	168.40	259.0	-0.5	0.3	0.4	0.63	0.54	81.08	
351.0	1.50	189.30	351.0	-2.1	0.2	0.8	1.05	0.98	22.72	
443.0	2.60	199.00	442.9	-5.3	-0.6	0.9	1.25	1.20	10.54	
535.0	4.00	199.70	534.8	-10.3	-2.4	0.6	1.52	1.52	0.76	
628.0	5.40	196.00	627.5	-17.6	-4.7	0.4	1.54	1.51	-3.98	
720.0	6.60	199.40	718.9	-26.7	-7.7	0.2	1.36	1.30	3.70	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 28G-212
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Well:	Wiedeman Federal 28G-212	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)
813.0	7.70	200.60	811.2	-37.6	-11.6	-0.6	1.19	1.18	1.29
902.0	8.70	203.10	899.3	-49.4	-16.4	-1.8	1.19	1.12	2.81
1,016.0	10.80	205.90	1,011.7	-66.9	-24.4	-4.6	1.89	1.84	2.46
1,108.0	14.50	205.30	1,101.4	-85.1	-33.1	-7.8	4.02	4.02	-0.65
1,201.0	14.60	203.60	1,191.4	-106.3	-42.8	-11.1	0.47	0.11	-1.83
1,293.0	14.40	202.50	1,280.5	-127.5	-51.8	-13.8	0.37	-0.22	-1.20
1,386.0	14.20	200.10	1,370.6	-148.9	-60.1	-15.7	0.67	-0.22	-2.58
1,478.0	15.50	199.00	1,459.5	-171.2	-68.0	-17.0	1.45	1.41	-1.20
1,570.0	15.10	197.10	1,548.3	-194.2	-75.5	-17.8	0.70	-0.43	-2.07
1,663.0	14.70	194.80	1,638.2	-217.2	-82.1	-17.6	0.77	-0.43	-2.47
1,755.0	16.30	196.40	1,726.8	-240.9	-88.7	-17.3	1.80	1.74	1.74
1,848.0	16.70	199.70	1,816.0	-266.0	-96.9	-18.1	1.10	0.43	3.55
1,943.0	16.10	197.30	1,907.1	-291.4	-105.5	-19.1	0.95	-0.63	-2.53
2,038.0	16.20	202.40	1,998.4	-316.2	-114.4	-20.7	1.50	0.11	5.37
2,134.0	15.70	203.20	2,090.7	-340.6	-124.6	-23.6	0.57	-0.52	0.83
2,229.0	14.90	198.30	2,182.3	-364.0	-133.5	-25.6	1.60	-0.84	-5.16
2,324.0	15.50	202.50	2,274.0	-387.3	-142.2	-27.4	1.32	0.63	4.42
2,420.0	14.90	199.70	2,366.6	-410.8	-151.3	-29.5	0.99	-0.63	-2.92
2,515.0	15.70	205.50	2,458.3	-433.9	-161.0	-32.2	1.82	0.84	6.11
2,610.0	15.50	204.30	2,549.8	-457.0	-171.7	-36.0	0.40	-0.21	-1.26
2,705.0	15.50	203.40	2,641.3	-480.3	-182.0	-39.3	0.25	0.00	-0.95
2,801.0	15.70	202.20	2,733.8	-504.1	-192.0	-42.2	0.40	0.21	-1.25
2,896.0	15.10	200.80	2,825.4	-527.5	-201.2	-44.5	0.74	-0.63	-1.47
2,991.0	14.10	199.50	2,917.3	-550.0	-209.5	-46.1	1.11	-1.05	-1.37
3,086.0	15.30	202.50	3,009.2	-572.5	-218.1	-48.0	1.50	1.26	3.16
3,182.0	14.50	202.20	3,102.0	-595.3	-227.5	-50.6	0.84	-0.83	-0.31
3,277.0	12.90	199.50	3,194.3	-616.3	-235.6	-52.4	1.81	-1.68	-2.84
3,372.0	13.70	197.10	3,286.7	-637.1	-242.4	-53.1	1.02	0.84	-2.53
3,467.0	14.30	201.10	3,378.9	-658.8	-250.0	-54.2	1.20	0.63	4.21
3,563.0	14.60	208.20	3,471.9	-680.5	-259.9	-57.7	1.87	0.31	7.40
3,658.0	15.00	204.10	3,563.7	-702.3	-270.6	-61.8	1.18	0.42	-4.32
3,753.0	12.80	201.60	3,655.9	-723.3	-279.5	-64.4	2.40	-2.32	-2.63
3,848.0	14.30	207.30	3,748.3	-743.5	-288.8	-67.6	2.11	1.58	6.00
3,943.0	16.30	203.20	3,839.9	-766.2	-299.4	-71.4	2.39	2.11	-4.32
4,038.0	15.80	200.90	3,931.2	-790.5	-309.3	-74.0	0.85	-0.53	-2.42
4,134.0	14.90	198.80	4,023.8	-814.4	-317.9	-75.6	1.10	-0.94	-2.19
4,229.0	12.90	195.80	4,116.0	-836.2	-324.7	-76.0	2.24	-2.11	-3.16
4,324.0	13.90	196.90	4,208.4	-857.3	-330.9	-76.0	1.09	1.05	1.16
4,419.0	14.70	202.70	4,300.5	-879.4	-338.9	-77.4	1.73	0.84	6.11
4,514.0	13.10	202.40	4,392.7	-900.4	-347.7	-79.9	1.69	-1.68	-0.32
4,610.0	15.20	199.50	4,485.8	-922.4	-356.0	-81.7	2.31	2.19	-3.02
4,705.0	13.80	198.50	4,577.7	-944.8	-363.8	-82.8	1.50	-1.47	-1.05

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 28G-212
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Well:	Wiedeman Federal 28G-212	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)
4,800.0	14.90	203.80	4,669.8	-966.8	-372.3	-84.8	1.80	1.16	5.58
4,896.0	13.60	204.80	4,762.8	-988.3	-382.0	-88.1	1.38	-1.35	1.04
4,991.0	15.80	202.70	4,854.7	-1,010.4	-391.7	-91.2	2.38	2.32	-2.21
5,086.0	14.20	201.50	4,946.5	-1,033.1	-400.9	-93.6	1.72	-1.68	-1.26
5,181.0	15.70	204.10	5,038.3	-1,055.7	-410.5	-96.4	1.73	1.58	2.74
5,276.0	13.40	202.40	5,130.2	-1,077.6	-419.9	-99.3	2.46	-2.42	-1.79
5,372.0	14.50	203.60	5,223.4	-1,098.9	-429.0	-102.0	1.18	1.15	1.25
5,467.0	14.70	199.50	5,315.3	-1,121.2	-437.7	-104.1	1.11	0.21	-4.32
5,562.0	12.80	196.60	5,407.6	-1,142.6	-444.8	-104.8	2.13	-2.00	-3.05
5,658.0	13.90	200.10	5,501.0	-1,163.7	-451.8	-105.6	1.42	1.15	3.65
5,753.0	12.50	200.10	5,593.5	-1,184.0	-459.2	-107.1	1.47	-1.47	0.00
5,848.0	10.00	199.90	5,686.6	-1,201.4	-465.6	-108.2	2.63	-2.63	-0.21
5,944.0	7.90	194.80	5,781.5	-1,215.7	-470.1	-108.6	2.34	-2.19	-5.31
6,039.0	6.20	193.40	5,875.7	-1,227.0	-472.9	-108.1	1.80	-1.79	-1.47
6,134.0	4.70	198.70	5,970.3	-1,235.6	-475.4	-108.0	1.66	-1.58	5.58
6,229.0	2.10	169.70	6,065.1	-1,241.0	-476.3	-107.4	3.20	-2.74	-30.53
6,325.0	1.50	252.30	6,161.1	-1,243.2	-477.2	-107.7	2.52	-0.63	86.04
6,420.0	1.70	270.70	6,256.1	-1,243.5	-479.8	-110.0	0.58	0.21	19.37
6,514.0	1.40	29.00	6,350.1	-1,242.5	-480.6	-111.1	2.84	-0.32	125.85
6,610.0	5.20	70.50	6,445.9	-1,240.0	-476.0	-107.3	4.43	3.96	43.23
6,705.0	8.70	90.00	6,540.2	-1,238.6	-464.7	-97.0	4.39	3.68	20.53
6,800.0	13.50	100.90	6,633.4	-1,240.7	-446.6	-79.0	5.49	5.05	11.47
6,896.0	20.20	101.10	6,725.2	-1,246.0	-419.3	-51.3	6.98	6.98	0.21
6,991.0	26.70	99.90	6,812.3	-1,252.8	-382.2	-13.7	6.86	6.84	-1.26
7,087.0	33.00	95.80	6,895.6	-1,259.2	-334.9	33.4	6.89	6.56	-4.27
7,181.0	40.40	92.10	6,970.9	-1,262.9	-278.9	88.2	8.21	7.87	-3.94
7,276.0	57.40	90.60	7,033.1	-1,264.5	-207.6	157.1	17.93	17.89	-1.58
7,383.0	77.50	90.00	7,073.9	-1,264.9	-109.3	251.5	18.79	18.79	-0.56
7,425.8	80.80	89.95	7,082.0	-1,264.9	-67.2	291.9	7.71	7.71	-0.11
7"									
7,479.0	84.90	89.90	7,088.6	-1,264.8	-14.5	342.5	7.71	7.71	-0.10
7,574.0	87.90	89.90	7,094.6	-1,264.7	80.4	433.4	3.16	3.16	0.00
7,669.0	89.50	89.50	7,096.7	-1,264.2	175.3	524.4	1.74	1.68	-0.42
7,764.0	89.50	89.10	7,097.6	-1,263.0	270.3	615.2	0.42	0.00	-0.42
7,859.0	90.10	89.50	7,097.9	-1,261.9	365.3	706.0	0.76	0.63	0.42
Deepest TVD Drilled - 7097.88'									
7,954.0	92.50	89.90	7,095.7	-1,261.4	460.3	797.0	2.56	2.53	0.42
8,049.0	91.60	88.10	7,092.3	-1,259.7	555.2	887.6	2.12	-0.95	-1.89
8,145.0	91.50	89.10	7,089.7	-1,257.4	651.1	979.0	1.05	-0.10	1.04
8,239.0	91.50	88.80	7,087.3	-1,255.6	745.1	1,068.6	0.32	0.00	-0.32
8,335.0	91.20	90.40	7,085.0	-1,255.0	841.0	1,160.5	1.70	-0.31	1.67
8,430.0	91.20	90.20	7,083.0	-1,255.5	936.0	1,251.8	0.21	0.00	-0.21
8,525.0	91.20	89.70	7,081.0	-1,255.4	1,031.0	1,342.9	0.53	0.00	-0.53

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 28G-212
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Well:	Wiedeman Federal 28G-212	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)
8,620.0	91.50	89.30	7,078.8	-1,254.6	1,126.0	1,433.8	0.53	0.32	-0.42
8,715.0	90.40	89.90	7,077.2	-1,253.9	1,221.0	1,524.8	1.32	-1.16	0.63
8,810.0	90.40	89.50	7,076.6	-1,253.4	1,316.0	1,615.8	0.42	0.00	-0.42
8,905.0	90.10	89.30	7,076.1	-1,252.4	1,410.9	1,706.6	0.38	-0.32	-0.21
9,001.0	90.00	89.10	7,076.1	-1,251.1	1,506.9	1,798.3	0.23	-0.10	-0.21
9,096.0	89.70	89.00	7,076.3	-1,249.5	1,601.9	1,889.0	0.33	-0.32	-0.11
9,191.0	90.20	89.90	7,076.4	-1,248.6	1,696.9	1,979.9	1.08	0.53	0.95
9,286.0	90.10	89.30	7,076.1	-1,247.9	1,791.9	2,070.9	0.64	-0.11	-0.63
9,381.0	90.80	89.10	7,075.4	-1,246.6	1,886.9	2,161.7	0.77	0.74	-0.21
9,476.0	90.20	89.00	7,074.6	-1,245.0	1,981.9	2,252.4	0.64	-0.63	-0.11
9,572.0	90.10	90.60	7,074.3	-1,244.7	2,077.9	2,344.4	1.67	-0.10	1.67
9,667.0	89.50	90.00	7,074.6	-1,245.2	2,172.9	2,435.7	0.89	-0.63	-0.63
9,762.0	90.30	90.70	7,074.8	-1,245.8	2,267.9	2,527.0	1.12	0.84	0.74
9,857.0	91.50	90.20	7,073.3	-1,246.5	2,362.9	2,618.3	1.37	1.26	-0.53
9,952.0	91.00	90.00	7,071.2	-1,246.7	2,457.8	2,709.5	0.57	-0.53	-0.21
10,047.0	90.80	90.20	7,069.8	-1,246.8	2,552.8	2,800.7	0.30	-0.21	0.21
10,142.0	91.20	89.90	7,068.1	-1,246.9	2,647.8	2,891.8	0.53	0.42	-0.32
10,238.0	91.30	89.10	7,066.0	-1,246.1	2,743.8	2,983.7	0.84	0.10	-0.83
10,333.0	91.20	88.40	7,063.9	-1,244.0	2,838.7	3,074.2	0.74	-0.11	-0.74
10,428.0	90.70	90.60	7,062.4	-1,243.2	2,933.7	3,165.1	2.37	-0.53	2.32
10,523.0	90.80	89.30	7,061.1	-1,243.1	3,028.7	3,256.2	1.37	0.11	-1.37
10,618.0	91.20	88.40	7,059.5	-1,241.2	3,123.7	3,346.8	1.04	0.42	-0.95
10,713.0	90.80	89.30	7,057.8	-1,239.3	3,218.6	3,437.4	1.04	-0.42	0.95
10,809.0	90.90	89.00	7,056.4	-1,237.9	3,314.6	3,529.1	0.33	0.10	-0.31
10,904.0	89.90	87.40	7,055.7	-1,234.9	3,409.6	3,619.3	1.99	-1.05	-1.68
10,999.0	90.20	88.40	7,055.6	-1,231.4	3,504.5	3,709.5	1.10	0.32	1.05
11,094.0	90.10	89.70	7,055.4	-1,229.8	3,599.5	3,800.1	1.37	-0.11	1.37
11,189.0	89.30	88.60	7,055.9	-1,228.4	3,694.5	3,890.9	1.43	-0.84	-1.16
11,284.0	90.00	90.20	7,056.5	-1,227.4	3,789.4	3,981.8	1.84	0.74	1.68
11,379.0	91.40	91.60	7,055.3	-1,228.9	3,884.4	4,073.3	2.08	1.47	1.47
11,474.0	90.50	90.00	7,053.7	-1,230.2	3,979.4	4,164.8	1.93	-0.95	-1.68
11,569.0	90.30	90.70	7,053.1	-1,230.8	4,074.4	4,256.1	0.77	-0.21	0.74
11,663.0	90.00	90.20	7,052.8	-1,231.6	4,168.4	4,346.5	0.62	-0.32	-0.53
11,720.0	90.00	90.20	7,052.8	-1,231.7	4,225.4	4,401.3	0.00	0.00	0.00
BHL 2385°FNL & 500°FEL, SEC.28									

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Wiedeman Federal 28G-212
Project:	SEC.28-T4N-R66W	TVD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Site:	Wiedeman 4N66W28F - East Pad Sec.28-T4N-R66W	MD Reference:	WELL @ 4774.0ft (Ensign Rig #134 RKB - 13')
Well:	Wiedeman Federal 28G-212	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 1128'FNL & 540'FW - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,348,100.92	3,198,078.91	40.286760	-104.789970
BHL 2385'FNL & 500'FE - survey misses target center by 12.4ft at 11720.0ft MD (7052.8 TVD, -1231.7 N, 4225.4 E) - Point	0.00	0.00	7,047.0	-1,241.9	4,229.7	1,346,892.96	3,202,318.20	40.283350	-104.774810

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,425.8	7,082.0	7"		7	8-3/4

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
7,859.0	7,097.9	-1,261.9	365.3	Deepest TVD Drilled - 7097.88'	

Checked By: _____	Approved By: _____	Date: _____
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