



PDC Energy, Inc.
Project: Weld Co., CO
Site: Sec.29-T4N-R66W
Well: Wiedeman 29K-403
Wellbore: Wellbore #1
Design: Design #3
Lat: 40° 16' 53.184 N
Long: 104° 48' 23.328 W
Pad GL: 4761.00
KB: WELL @ 4774.00usft (Original Well Elev)



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
4195.00	4.50	53.40	4177.14	209.38	233.95	0.00	0.00	-206.83	Start Drop -2.00
4420.00	0.00	0.00	4401.91	214.64	241.04	2.00	180.00	-212.02	Start 2102.32 hold at 4420.00 MD
6522.32	0.00	0.00	6504.23	214.64	241.04	0.00	0.00	-212.02	Start Build 7.50
7642.32	84.00	179.38	7263.99	-469.41	248.40	7.50	179.38	472.07	Start 74.00 hold at 7642.32 MD
7716.32	84.00	179.38	7271.72	-543.00	249.19	0.00	0.00	545.66	Start Build 5.00
7836.32	90.00	179.38	7276.00	-662.77	250.48	5.00	0.00	665.44	Start 3694.44 hold at 7836.32 MD
11565.00	94.60	185.90	7257.48	-4357.09	313.90	0.00	0.00	4357.09	TD at 11565.00

WELL DETAILS: Wiedeman 29K-403

+N/-S	+E/-W	Northing	Ground Level: Easting	4762.00 Latitude	Longitude	Slot
0.00	0.00	1346126.507	3193488.320	40° 16' 53.184 N	104° 48' 23.328 W	

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
Wiedeman 29K-403	7257.48	-4357.09	313.90	40° 16' 10.127 N	104° 48' 19.584 W	

CASING DETAILS

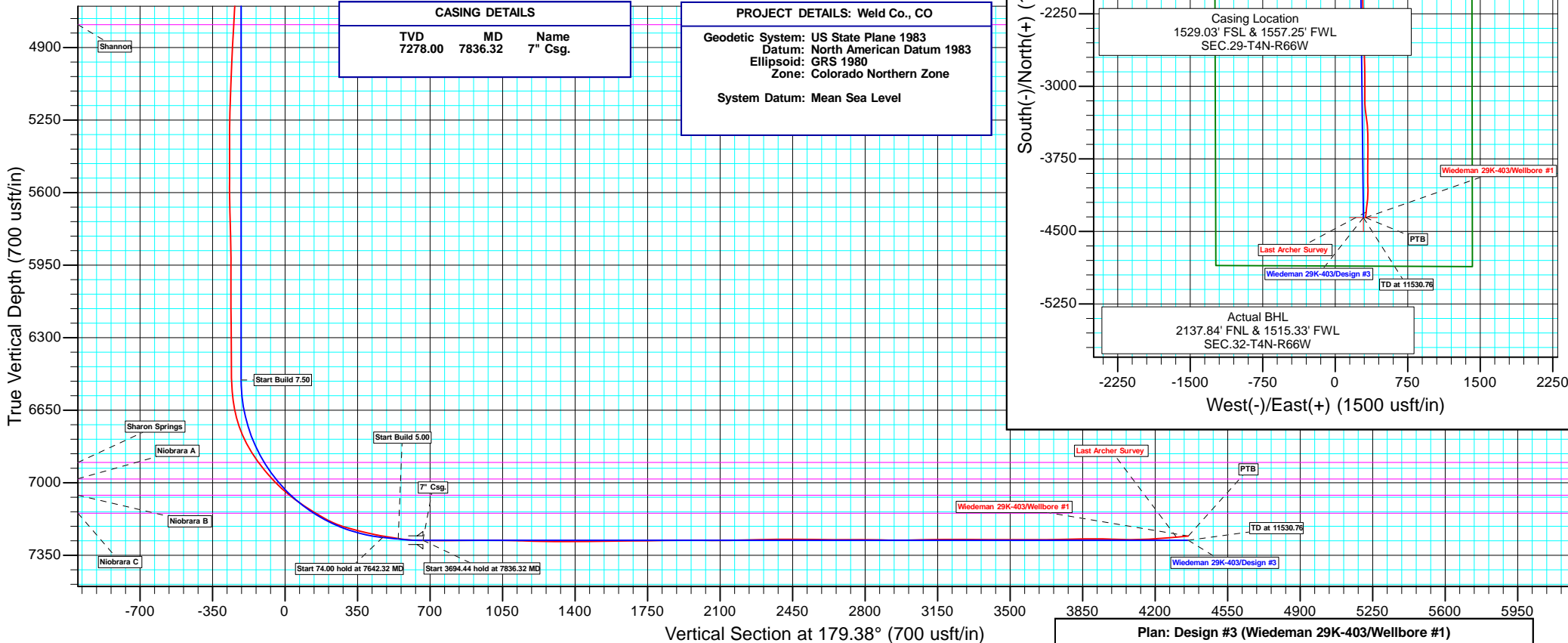
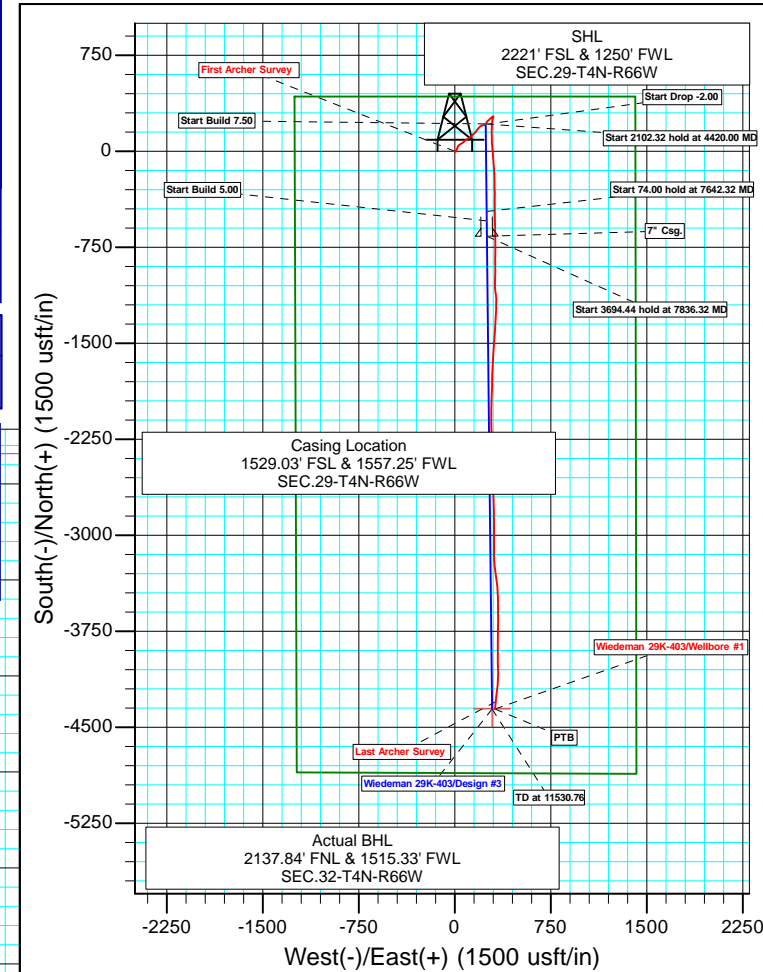
TVD	MD	Name
7278.00	7836.32	7" Csg.

PROJECT DETAILS: Weld Co., CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

Azimuths to True North
Magnetic North: 8.49°

Magnetic Field
Strength: 52760.5snT
Dip Angle: 66.85°
Date: 05/07/2014
Model: IGRF2010



Archer

PVA & Survey Report

Archer

PDC Energy, Inc.

Weld Co., CO

Sec.29-T4N-R66W

Wiedeman 29K-403

Wellbore #1

Survey: Survey #1

Standard Survey Report

28 July, 2014

Archer

Company:	PDC Energy, Inc.	Local Co-ordinate Reference:	Well Wiedeman 29K-403
Project:	Weld Co., CO	TVD Reference:	WELL @ 4774.00usft (Original Well Elev)
Site:	Sec.29-T4N-R66W	MD Reference:	WELL @ 4774.00usft (Original Well Elev)
Well:	Wiedeman 29K-403	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Project	Weld Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec.29-T4N-R66W			
Site Position:		Northing:	1,346,134.937 usft	Latitude:	40° 16' 53.292 N
From:	Lat/Long	Easting:	3,193,167.398 usft	Longitude:	104° 48' 27.468 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.45 °

Well	Wiedeman 29K-403					
Well Position	+N/-S	0.00 usft	Northing:	1,346,126.507 usft	Latitude:	40° 16' 53.184 N
	+E/-W	0.00 usft	Easting:	3,193,488.320 usft	Longitude:	104° 48' 23.328 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,762.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2014/05/07	8.49	66.85	52,761

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Survey Program	Date	2014/07/28			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
140.00	11,565.00	Survey #1 (Wellbore #1)	MWD	MWD v3:standard declination	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Archer Survey										
140.00	0.40	129.50	140.00	-0.31	0.38	0.31	0.29	0.29	0.00	
231.00	0.50	147.80	231.00	-0.85	0.83	0.85	0.19	0.11	20.11	
322.00	0.60	134.80	321.99	-1.52	1.38	1.52	0.18	0.11	-14.29	
414.00	0.40	148.40	413.99	-2.13	1.89	2.13	0.25	-0.22	14.78	
505.00	0.70	100.60	504.98	-2.51	2.61	2.51	0.58	0.33	-52.53	
596.00	0.60	113.00	595.98	-2.79	3.59	2.79	0.19	-0.11	13.63	
686.00	0.50	95.10	685.97	-3.01	4.42	3.01	0.22	-0.11	-19.89	
778.00	0.60	93.30	777.97	-3.08	5.30	3.08	0.11	0.11	-1.96	
869.00	0.30	85.30	868.97	-3.09	6.01	3.09	0.34	-0.33	-8.79	
1,027.00	0.10	72.50	1,026.97	-3.01	6.55	3.01	0.13	-0.13	-8.10	
1,131.00	0.40	18.90	1,130.97	-2.64	6.76	2.64	0.34	0.29	-51.54	

Company:	PDC Energy, Inc.	Local Co-ordinate Reference:	Well Wiedeman 29K-403
Project:	Weld Co., CO	TVD Reference:	WELL @ 4774.00usft (Original Well Elev)
Site:	Sec.29-T4N-R66W	MD Reference:	WELL @ 4774.00usft (Original Well Elev)
Well:	Wiedeman 29K-403	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,223.00	3.10	22.60	1,222.91	-0.04	7.82	0.04	2.94	2.93	4.02
1,313.00	3.60	26.90	1,312.76	4.73	10.03	-4.73	0.62	0.56	4.78
1,405.00	3.50	25.10	1,404.58	9.85	12.53	-9.85	0.16	-0.11	-1.96
1,495.00	6.20	20.70	1,494.25	16.88	15.41	-16.88	3.03	3.00	-4.89
1,585.00	6.10	19.10	1,583.74	25.95	18.70	-25.95	0.22	-0.11	-1.78
1,675.00	7.60	23.10	1,673.09	35.94	22.60	-35.94	1.75	1.67	4.44
1,765.00	8.20	43.70	1,762.25	46.06	29.37	-46.06	3.20	0.67	22.89
1,855.00	7.00	60.50	1,851.47	53.40	38.58	-53.40	2.79	-1.33	18.67
1,945.00	6.30	60.70	1,940.87	58.52	47.66	-58.52	0.78	-0.78	0.22
2,035.00	6.00	58.90	2,030.35	63.36	55.99	-63.36	0.40	-0.33	-2.00
2,125.00	7.00	49.10	2,119.77	69.38	64.16	-69.38	1.66	1.11	-10.89
2,214.00	6.00	45.10	2,208.20	76.22	71.56	-76.22	1.23	-1.12	-4.49
2,305.00	5.90	49.00	2,298.71	82.64	78.46	-82.64	0.46	-0.11	4.29
2,395.00	7.10	60.50	2,388.13	88.42	86.79	-88.42	1.96	1.33	12.78
2,485.00	6.30	58.00	2,477.52	93.77	95.82	-93.77	0.95	-0.89	-2.78
2,575.00	7.70	55.60	2,566.85	99.80	104.98	-99.80	1.59	1.56	-2.67
2,665.00	8.00	54.90	2,656.00	106.80	115.08	-106.80	0.35	0.33	-0.78
2,755.00	8.40	53.60	2,745.08	114.31	125.49	-114.31	0.49	0.44	-1.44
2,845.00	7.00	43.60	2,834.27	122.18	134.57	-122.18	2.15	-1.56	-11.11
2,935.00	6.40	35.00	2,923.66	130.26	141.23	-130.26	1.30	-0.67	-9.56
3,025.00	6.80	51.10	3,013.07	137.72	148.25	-137.72	2.10	0.44	17.89
3,115.00	5.80	44.50	3,102.53	144.31	155.59	-144.31	1.37	-1.11	-7.33
3,205.00	4.60	38.50	3,192.16	150.37	161.02	-150.37	1.46	-1.33	-6.67
3,295.00	4.90	40.00	3,281.85	156.14	165.74	-156.14	0.36	0.33	1.67
3,385.00	3.30	32.60	3,371.61	161.27	169.60	-161.27	1.87	-1.78	-8.22
3,475.00	5.20	33.90	3,461.36	166.84	173.28	-166.84	2.11	2.11	1.44
3,565.00	4.40	46.40	3,551.05	172.60	178.05	-172.60	1.46	-0.89	13.89
3,655.00	5.10	36.40	3,640.74	178.21	182.92	-178.21	1.20	0.78	-11.11
3,745.00	6.30	41.00	3,730.29	185.15	188.54	-185.15	1.43	1.33	5.11
3,835.00	7.70	48.60	3,819.62	192.87	196.30	-192.87	1.86	1.56	8.44
3,925.00	8.20	68.40	3,908.77	199.22	206.79	-199.22	3.08	0.56	22.00
4,015.00	7.10	73.70	3,997.97	203.14	218.10	-203.14	1.45	-1.22	5.89
4,109.00	5.10	71.10	4,091.44	206.13	227.63	-206.13	2.15	-2.13	-2.77
4,195.00	4.50	53.40	4,177.14	209.38	233.95	-209.38	1.85	-0.70	-20.58
4,285.00	5.40	42.60	4,266.80	214.60	239.66	-214.60	1.44	1.00	-12.00
4,375.00	5.20	37.00	4,356.42	220.97	244.98	-220.97	0.62	-0.22	-6.22
4,465.00	4.30	33.50	4,446.11	227.04	249.29	-227.04	1.05	-1.00	-3.89
4,555.00	5.50	35.90	4,535.78	233.35	253.69	-233.35	1.35	1.33	2.67
4,645.00	6.10	46.00	4,625.32	240.17	259.65	-240.17	1.31	0.67	11.22
4,735.00	5.50	50.20	4,714.86	246.25	266.41	-246.25	0.82	-0.67	4.67
4,825.00	4.50	46.10	4,804.52	251.46	272.27	-251.46	1.18	-1.11	-4.56
4,915.00	4.60	49.00	4,894.23	256.27	277.53	-256.27	0.28	0.11	3.22
5,005.00	4.00	52.80	4,983.98	260.54	282.76	-260.54	0.74	-0.67	4.22
5,095.00	3.30	49.20	5,073.80	264.13	287.22	-264.13	0.82	-0.78	-4.00
5,185.00	3.10	42.20	5,163.66	267.63	290.81	-267.63	0.49	-0.22	-7.78
5,275.00	2.90	77.30	5,253.54	269.93	294.67	-269.93	2.02	-0.22	39.00
5,365.00	1.40	83.40	5,343.47	270.56	297.98	-270.56	1.68	-1.67	6.78
5,455.00	0.60	116.30	5,433.46	270.47	299.50	-270.47	1.06	-0.89	36.56
5,545.00	0.60	52.10	5,523.46	270.56	300.29	-270.56	0.71	0.00	-71.33
5,635.00	0.40	178.90	5,613.46	270.53	300.67	-270.53	1.00	-0.22	140.89
5,725.00	1.50	189.10	5,703.44	269.05	300.49	-269.05	1.23	1.22	11.33
5,815.00	1.80	182.40	5,793.40	266.48	300.24	-266.48	0.40	0.33	-7.44
5,905.00	1.30	225.10	5,883.37	264.34	299.46	-264.34	1.36	-0.56	47.44
5,995.00	0.70	321.40	5,973.36	264.05	298.40	-264.05	1.71	-0.67	107.00

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Site:	Sec.29-T4N-R66W	MD Reference:	WELL @ 4774.00usft (Original Well Elev)
Well:	Wiedeman 29K-403	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,085.00	0.30	317.00	6,063.36	264.66	297.89	-264.66	0.45	-0.44	-4.89	
6,175.00	0.80	203.10	6,153.36	264.25	297.49	-264.25	1.07	0.56	-126.56	
6,265.00	0.80	203.10	6,243.35	263.09	296.99	-263.09	0.00	0.00	0.00	
6,355.00	0.40	261.30	6,333.34	262.47	296.44	-262.47	0.76	-0.44	64.67	
6,445.00	0.40	279.20	6,423.34	262.47	295.81	-262.47	0.14	0.00	19.89	
6,490.00	0.40	249.10	6,468.34	262.44	295.51	-262.44	0.46	0.00	-66.89	
6,535.00	1.90	187.40	6,513.33	261.64	295.27	-261.64	3.88	3.33	-137.11	
6,580.00	5.30	185.10	6,558.24	258.83	294.99	-258.83	7.56	7.56	-5.11	
6,625.00	7.60	183.60	6,602.95	253.79	294.62	-253.79	5.12	5.11	-3.33	
6,670.00	11.00	189.50	6,647.35	246.59	293.72	-246.59	7.84	7.56	13.11	
6,715.00	15.60	189.80	6,691.13	236.38	291.98	-236.38	10.22	10.22	0.67	
6,760.00	20.10	188.10	6,733.96	222.76	289.86	-222.76	10.07	10.00	-3.78	
6,805.00	24.80	184.90	6,775.54	205.69	287.96	-205.69	10.79	10.44	-7.11	
6,850.00	28.90	180.10	6,815.68	185.40	287.14	-185.40	10.30	9.11	-10.67	
6,895.00	31.30	178.30	6,854.61	162.84	287.47	-162.84	5.70	5.33	-4.00	
6,940.00	34.70	179.20	6,892.35	138.34	287.99	-138.34	7.63	7.56	2.00	
6,985.00	38.50	179.90	6,928.47	111.52	288.20	-111.52	8.50	8.44	1.56	
7,030.00	41.70	177.80	6,962.88	82.55	288.80	-82.55	7.72	7.11	-4.67	
7,075.00	44.00	175.10	6,995.88	52.01	290.71	-52.01	6.54	5.11	-6.00	
7,120.00	47.90	174.30	7,027.16	19.81	293.70	-19.81	8.76	8.67	-1.78	
7,165.00	51.00	175.00	7,056.41	-14.23	296.88	14.23	6.99	6.89	1.56	
7,210.00	53.50	176.40	7,083.96	-49.70	299.54	49.70	6.08	5.56	3.11	
7,255.00	56.60	177.10	7,109.73	-86.52	301.63	86.52	7.01	6.89	1.56	
7,300.00	57.80	176.40	7,134.11	-124.29	303.78	124.29	2.97	2.67	-1.56	
7,345.00	59.30	175.60	7,157.59	-162.58	306.46	162.58	3.66	3.33	-1.78	
7,390.00	62.40	176.70	7,179.51	-201.79	309.09	201.79	7.21	6.89	2.44	
7,435.00	67.20	179.20	7,198.66	-242.46	310.53	242.46	11.79	10.67	5.56	
7,480.00	73.70	179.70	7,213.71	-284.84	310.93	284.84	14.48	14.44	1.11	
7,525.00	75.30	180.10	7,225.74	-328.21	311.00	328.21	3.66	3.56	0.89	
7,570.00	76.20	180.10	7,236.82	-371.82	310.93	371.82	2.00	2.00	0.00	
7,615.00	77.40	180.00	7,247.09	-415.63	310.89	415.63	2.68	2.67	-0.22	
7,661.00	80.20	179.30	7,256.03	-460.75	311.17	460.75	6.27	6.09	-1.52	
7,706.00	81.10	178.50	7,263.34	-505.14	312.02	505.14	2.66	2.00	-1.78	
7,751.00	81.70	178.20	7,270.07	-549.62	313.30	549.62	1.49	1.33	-0.67	
7,796.00	84.40	179.30	7,275.51	-594.27	314.27	594.27	6.47	6.00	2.44	
7,841.00	88.50	179.70	7,278.30	-639.17	314.67	639.17	9.15	9.11	0.89	
7,952.00	90.80	179.80	7,278.97	-750.16	315.15	750.16	2.07	2.07	0.09	
8,046.00	90.40	179.90	7,277.99	-844.16	315.40	844.16	0.44	-0.43	0.11	
8,135.00	89.70	179.80	7,277.91	-933.16	315.63	933.16	0.79	-0.79	-0.11	
8,226.00	89.70	182.40	7,278.39	-1,024.13	313.88	1,024.13	2.86	0.00	2.86	
8,315.00	88.90	171.30	7,279.48	-1,112.85	318.76	1,112.85	12.50	-0.90	-12.47	
8,406.00	87.90	180.80	7,282.03	-1,203.49	325.03	1,203.49	10.49	-1.10	10.44	
8,495.00	89.90	184.50	7,283.73	-1,292.36	320.91	1,292.36	4.72	2.25	4.16	
8,585.00	90.50	185.20	7,283.42	-1,382.04	313.30	1,382.04	1.02	0.67	0.78	
8,676.00	90.60	183.40	7,282.55	-1,472.77	306.48	1,472.77	1.98	0.11	-1.98	
8,766.00	90.50	182.80	7,281.68	-1,562.64	301.61	1,562.64	0.68	-0.11	-0.67	
8,856.00	90.50	182.80	7,280.90	-1,652.53	297.22	1,652.53	0.00	0.00	0.00	
8,946.00	90.80	182.20	7,279.88	-1,742.44	293.29	1,742.44	0.75	0.33	-0.67	
9,036.00	91.10	181.80	7,278.38	-1,832.37	290.15	1,832.37	0.56	0.33	-0.44	
9,126.00	90.10	181.80	7,277.44	-1,922.32	287.32	1,922.32	1.11	-1.11	0.00	
9,216.00	89.20	181.30	7,277.99	-2,012.28	284.89	2,012.28	1.14	-1.00	-0.56	
9,306.00	90.40	178.90	7,278.31	-2,102.27	284.73	2,102.27	2.98	1.33	-2.67	
9,396.00	91.40	179.00	7,276.89	-2,192.25	286.38	2,192.25	1.12	1.11	0.11	
9,486.00	91.10	178.40	7,274.93	-2,282.20	288.42	2,282.20	0.75	-0.33	-0.67	

Company:	PDC Energy, Inc.	Local Co-ordinate Reference:	Well Wiedeman 29K-403
Project:	Weld Co., CO	TVD Reference:	WELL @ 4774.00usft (Original Well Elev)
Site:	Sec.29-T4N-R66W	MD Reference:	WELL @ 4774.00usft (Original Well Elev)
Well:	Wiedeman 29K-403	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDMDBBW

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,575.00	91.30	178.10	7,273.07	-2,371.14	291.14	2,371.14	0.41	0.22	-0.34
9,665.00	89.40	177.90	7,272.52	-2,461.08	294.28	2,461.08	2.12	-2.11	-0.22
9,755.00	89.10	178.10	7,273.69	-2,551.02	297.42	2,551.02	0.40	-0.33	0.22
9,845.00	89.50	178.30	7,274.79	-2,640.96	300.25	2,640.96	0.50	0.44	0.22
9,935.00	90.30	178.60	7,274.95	-2,730.93	302.68	2,730.93	0.95	0.89	0.33
10,025.00	89.40	178.60	7,275.19	-2,820.90	304.88	2,820.90	1.00	-1.00	0.00
10,115.00	88.30	180.20	7,276.99	-2,910.87	305.82	2,910.87	2.16	-1.22	1.78
10,205.00	91.50	180.40	7,277.15	-3,000.86	305.35	3,000.86	3.56	3.56	0.22
10,295.00	91.10	179.90	7,275.11	-3,090.84	305.12	3,090.84	0.71	-0.44	-0.56
10,384.00	90.70	177.70	7,273.71	-3,179.80	306.98	3,179.80	2.51	-0.45	-2.47
10,474.00	89.50	173.30	7,273.55	-3,269.50	314.04	3,269.50	5.07	-1.33	-4.89
10,564.00	90.00	170.80	7,273.94	-3,358.63	326.49	3,358.63	2.83	0.56	-2.78
10,654.00	89.10	177.40	7,274.65	-3,448.10	335.73	3,448.10	7.40	-1.00	7.33
10,744.00	90.10	180.80	7,275.28	-3,538.07	337.15	3,538.07	3.94	1.11	3.78
10,834.00	90.50	180.80	7,274.81	-3,628.06	335.89	3,628.06	0.44	0.44	0.00
10,924.00	90.90	178.90	7,273.71	-3,718.05	336.13	3,718.05	2.16	0.44	-2.11
11,014.00	91.50	181.40	7,271.82	-3,808.02	335.89	3,808.02	2.86	0.67	2.78
11,104.00	90.20	178.80	7,270.49	-3,898.00	335.73	3,898.00	3.23	-1.44	-2.89
11,194.00	87.90	179.10	7,271.98	-3,987.97	337.38	3,987.97	2.58	-2.56	0.33
11,284.00	88.70	179.80	7,274.65	-4,077.92	338.25	4,077.92	1.18	0.89	0.78
11,374.00	94.20	186.10	7,272.37	-4,167.69	333.63	4,167.69	9.29	6.11	7.00
11,464.00	94.50	185.90	7,265.55	-4,256.94	324.24	4,256.94	0.40	0.33	-0.22
Last Archer Survey									
11,507.00	94.60	185.90	7,262.14	-4,299.58	319.84	4,299.58	0.23	0.23	0.00
PTB - Wiedeman 29K-403									
11,565.00	94.60	185.90	7,257.48	-4,357.09	313.90	4,357.09	0.00	0.00	0.00

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
140.00	140.00	-0.31	0.38	First Archer Survey
11,507.00	7,262.14	-4,299.58	319.84	Last Archer Survey
11,565.00	7,257.48	-4,357.09	313.90	PTB

Checked By: _____	Approved By: _____	Date: _____
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