

**Project:** Weld County, CO (NAD83)  
**Site:** Stroth 13GK-HZ Pad (True)  
**Well:** 13K-243  
**Wellbore:** Lateral  
**Design:** Lateral

TVD	MD	+N/-S	+E/-W	Annotation
7002.66	7180.00	-146.44	-724.77	Crosses Sec13 1/2 Section 460'Setback
7067.03	8928.00	-1881.72	-671.22	Crosses Sec13 South 460'Setback
7068.20	9388.00	-2341.66	-675.47	Crosses into Sec24
7069.65	9848.00	-2801.53	-674.70	Crosses Sec24 North 460'Setback



Azimuths to True North  
Magnetic North:  $8.47^\circ$

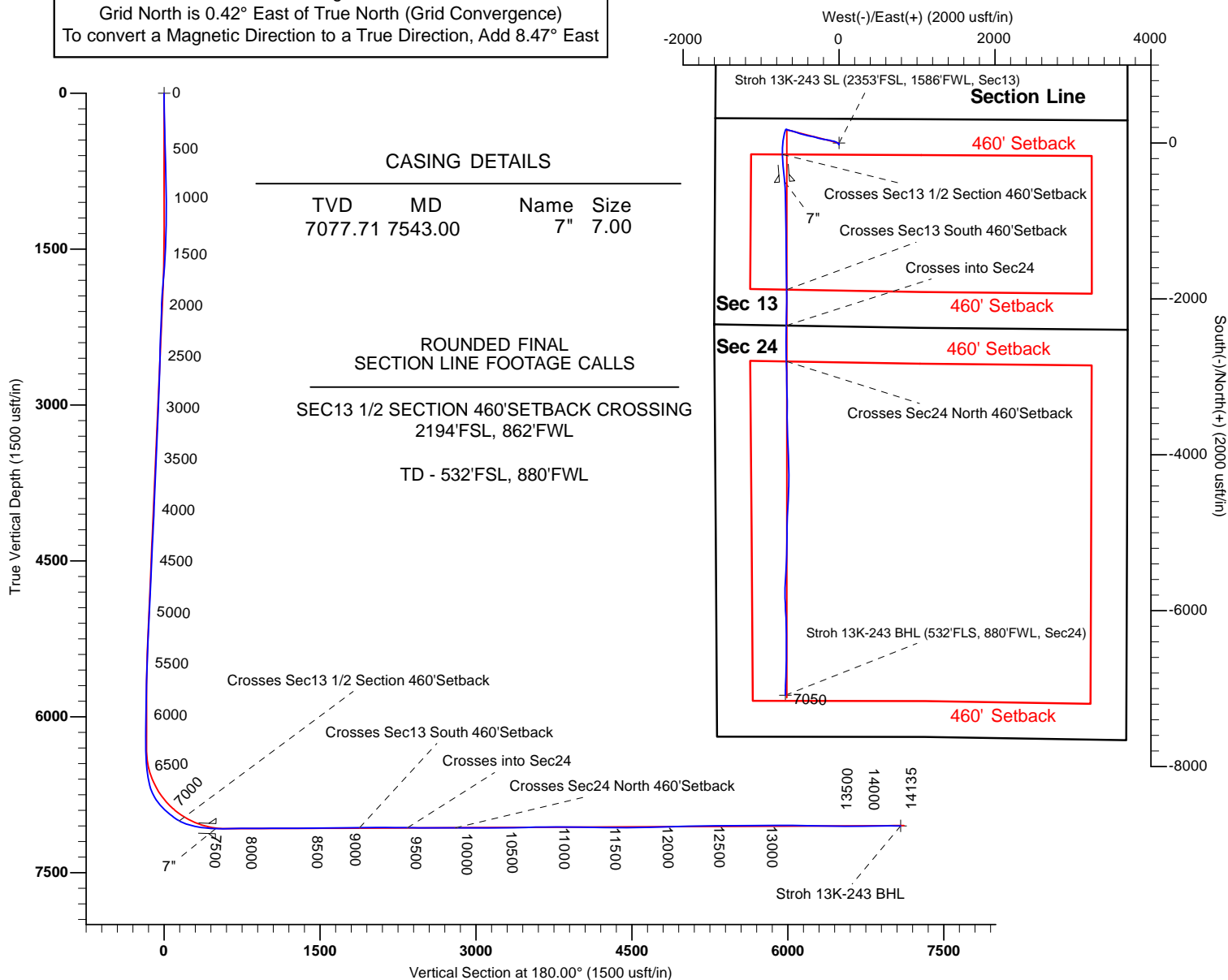
Magnetic Field  
Strength: 52585.1nT  
Dip Angle: 66.83°  
Date: 04/17/2015  
Model: IGRF2015

Plats by Lat40 drawn in Grid North  
Section Lines provided by  
Lat40 PLS and Rotated  
+ .42° to True North  
All Info is drawn in True North

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Stroh 13K-243 SL	0.00	0.00	0.00	40.311029	-104.842974	Point
Stroh 13K-243 BHL	7050.10	-7085.68	-686.16	40.291579	-104.845434	Point



Ground Elevation 4805.00 Ensign 123 KB = 13' RKB = 4818'  
Grid North is 0.42° East of True North (Grid Convergence)  
To convert a Magnetic Direction to a True Direction, Add 8.47° East



## Survey Report

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well 13K-243 - Slot 13K-243
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Weld County, CO (NAD83)		
<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	Stroh 13GK-HZ Pad (True), centered on 13G-203				
Site Position:		Northing:	1,356,827.556 usft	Latitude:	40.311030
From:	Lat/Long	Easting:	3,183,166.780 usft	Longitude:	-104.843190
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.42 °

Well	13K-243 - Slot 13K-243					
Well Position	+N/-S	0.00 usft	Northing:	1,356,827.808 usft	Latitude:	40.311030
	+E/-W	0.00 usft	Easting:	3,183,226.915 usft	Longitude:	-104.842975
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,805.00 usft

<b>Wellbore</b>	Lateral				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	04/17/15	8.47	66.83	52,585

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

<b>Survey Program</b>	<b>Date</b>	05/04/15			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
175.00	14,083.00	Survey #1 (Lateral)	MWD	MWD v3:standard declination	
14,135.00	14,135.00	Survey #2 (Lateral)	Projection	Projection	

<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 (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Stroh 13K-243 SL</b>										
175.00	1.10	171.50	174.99	-1.66	0.25	1.66	0.63	0.63	0.00	
268.00	1.70	170.50	267.96	-3.90	0.61	3.90	0.65	0.65	-1.08	
361.00	1.40	178.00	360.93	-6.40	0.88	6.40	0.39	-0.32	8.06	
455.00	1.40	180.30	454.90	-8.70	0.91	8.70	0.06	0.00	2.45	
548.00	1.80	192.60	547.86	-11.26	0.58	11.26	0.56	0.43	13.23	
641.00	1.80	205.10	640.82	-14.01	-0.35	14.01	0.42	0.00	13.44	
734.00	0.80	170.10	733.79	-15.97	-0.86	15.97	1.33	-1.08	-37.63	
827.00	1.10	143.00	826.78	-17.32	-0.21	17.32	0.57	0.32	-29.14	

# Survey Report

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well 13K-243 - Slot 13K-243
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
906.00	1.10	136.50	905.77	-18.48	0.77	18.48	0.16	0.00	-8.23
1,013.00	1.20	134.50	1,012.74	-20.01	2.27	20.01	0.10	0.09	-1.87
1,107.00	1.30	145.80	1,106.72	-21.58	3.57	21.58	0.28	0.11	12.02
1,200.00	0.90	320.10	1,199.72	-21.89	3.70	21.89	2.36	-0.43	187.42
1,293.00	2.30	316.40	1,292.68	-19.98	1.94	19.98	1.51	1.51	-3.98
1,386.00	1.90	312.00	1,385.62	-17.60	-0.49	17.60	0.46	-0.43	-4.73
1,479.00	3.90	316.30	1,478.49	-14.28	-3.82	14.28	2.16	2.15	4.62
1,573.00	4.90	313.60	1,572.21	-9.20	-8.94	9.20	1.09	1.06	-2.87
1,666.00	5.70	315.70	1,664.82	-3.15	-15.04	3.15	0.88	0.86	2.26
1,759.00	8.40	306.20	1,757.11	4.17	-23.75	-4.17	3.15	2.90	-10.22
1,852.00	9.70	299.20	1,848.95	12.00	-36.07	-12.00	1.83	1.40	-7.53
1,946.00	10.30	290.40	1,941.53	18.79	-50.86	-18.79	1.74	0.64	-9.36
2,035.00	10.40	279.20	2,029.09	22.85	-66.25	-22.85	2.26	0.11	-12.58
2,125.00	9.60	276.50	2,117.72	25.00	-81.72	-25.00	1.03	-0.89	-3.00
2,215.00	8.90	286.20	2,206.55	27.79	-95.87	-27.79	1.90	-0.78	10.78
2,305.00	10.20	286.60	2,295.31	32.01	-110.19	-32.01	1.45	1.44	0.44
2,394.00	9.40	280.20	2,383.01	35.55	-124.90	-35.55	1.52	-0.90	-7.19
2,484.00	8.00	278.60	2,471.97	37.79	-138.32	-37.79	1.58	-1.56	-1.78
2,574.00	9.50	281.30	2,560.92	40.18	-151.80	-40.18	1.73	1.67	3.00
2,664.00	10.00	280.10	2,649.62	43.01	-166.78	-43.01	0.60	0.56	-1.33
2,754.00	11.30	278.80	2,738.07	45.72	-183.18	-45.72	1.47	1.44	-1.44
2,844.00	10.20	276.50	2,826.49	47.98	-199.82	-47.98	1.31	-1.22	-2.56
2,934.00	10.10	276.40	2,915.08	49.76	-215.58	-49.76	0.11	-0.11	-0.11
3,023.00	9.60	286.00	3,002.77	52.67	-230.47	-52.67	1.93	-0.56	10.79
3,113.00	10.30	285.10	3,091.42	56.84	-245.45	-56.84	0.80	0.78	-1.00
3,203.00	8.70	283.90	3,180.18	60.57	-259.82	-60.57	1.79	-1.78	-1.33
3,293.00	9.00	291.30	3,269.11	64.76	-272.99	-64.76	1.31	0.33	8.22
3,383.00	10.20	287.60	3,357.85	69.73	-287.15	-69.73	1.50	1.33	-4.11
3,473.00	7.90	283.70	3,446.73	73.60	-300.75	-73.60	2.64	-2.56	-4.33
3,563.00	9.60	282.00	3,535.68	76.63	-314.10	-76.63	1.91	1.89	-1.89
3,652.00	11.10	283.40	3,623.23	80.16	-329.70	-80.16	1.71	1.69	1.57
3,742.00	10.20	282.30	3,711.68	83.86	-345.91	-83.86	1.03	-1.00	-1.22
3,832.00	12.10	281.10	3,799.97	87.38	-362.95	-87.38	2.13	2.11	-1.33
3,922.00	12.60	282.00	3,887.89	91.23	-381.81	-91.23	0.60	0.56	1.00
4,012.00	12.40	281.10	3,975.76	95.14	-400.90	-95.14	0.31	-0.22	-1.00
4,102.00	11.40	277.90	4,063.82	98.22	-419.19	-98.22	1.33	-1.11	-3.56
4,192.00	10.90	288.00	4,152.13	102.07	-436.10	-102.07	2.24	-0.56	11.22
4,282.00	10.30	285.30	4,240.60	106.82	-451.95	-106.82	0.87	-0.67	-3.00
4,372.00	9.80	286.20	4,329.21	111.08	-467.07	-111.08	0.58	-0.56	1.00
4,462.00	9.20	285.00	4,417.98	115.08	-481.37	-115.08	0.70	-0.67	-1.33
4,552.00	8.60	284.30	4,506.90	118.61	-494.84	-118.61	0.68	-0.67	-0.78
4,642.00	6.90	290.20	4,596.07	122.14	-506.44	-122.14	2.08	-1.89	6.56
4,732.00	7.30	291.50	4,685.38	126.10	-516.83	-126.10	0.48	0.44	1.44

# Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,822.00	9.00	291.70	4,774.47	130.80	-528.69	-130.80	1.89	1.89	0.22	
4,912.00	10.30	291.00	4,863.19	136.28	-542.74	-136.28	1.45	1.44	-0.78	
5,002.00	9.20	288.70	4,951.89	141.47	-557.07	-141.47	1.30	-1.22	-2.56	
5,092.00	9.00	284.30	5,040.76	145.52	-570.71	-145.52	0.80	-0.22	-4.89	
5,181.00	9.20	284.30	5,128.64	149.00	-584.35	-149.00	0.22	0.22	0.00	
5,271.00	10.20	286.60	5,217.35	153.05	-598.96	-153.05	1.19	1.11	2.56	
5,360.00	8.10	284.30	5,305.22	156.85	-612.59	-156.85	2.39	-2.36	-2.58	
5,450.00	8.40	282.30	5,394.29	159.82	-625.15	-159.82	0.46	0.33	-2.22	
5,540.00	8.00	277.80	5,483.37	162.07	-637.78	-162.07	0.84	-0.44	-5.00	
5,630.00	5.70	285.10	5,572.72	164.08	-648.30	-164.08	2.73	-2.56	8.11	
5,720.00	4.10	296.80	5,662.39	166.70	-655.49	-166.70	2.09	-1.78	13.00	
5,810.00	3.20	299.20	5,752.21	169.37	-660.55	-169.37	1.01	-1.00	2.67	
5,900.00	2.50	296.90	5,842.09	171.49	-664.50	-171.49	0.79	-0.78	-2.56	
5,990.00	1.80	309.60	5,932.03	173.28	-667.34	-173.28	0.94	-0.78	14.11	
6,080.00	1.60	300.30	6,021.99	174.81	-669.51	-174.81	0.38	-0.22	-10.33	
6,170.00	1.60	285.50	6,111.96	175.78	-671.81	-175.78	0.46	0.00	-16.44	
6,260.00	1.80	283.60	6,201.92	176.45	-674.39	-176.45	0.23	0.22	-2.11	
6,350.00	1.90	266.30	6,291.87	176.68	-677.25	-176.68	0.63	0.11	-19.22	
6,395.00	3.00	236.10	6,336.83	175.98	-678.98	-175.98	3.69	2.44	-67.11	
6,440.00	4.00	220.30	6,381.75	174.13	-680.97	-174.13	3.07	2.22	-35.11	
6,485.00	4.40	208.90	6,426.63	171.42	-682.82	-171.42	2.05	0.89	-25.33	
6,530.00	5.70	203.10	6,471.45	167.85	-684.53	-167.85	3.10	2.89	-12.89	
6,575.00	7.30	200.40	6,516.16	163.12	-686.40	-163.12	3.62	3.56	-6.00	
6,620.00	8.10	199.40	6,560.76	157.45	-688.45	-157.45	1.80	1.78	-2.22	
6,665.00	9.00	197.40	6,605.25	151.10	-690.56	-151.10	2.11	2.00	-4.44	
6,710.00	14.50	197.30	6,649.29	142.35	-693.29	-142.35	12.22	12.22	-0.22	
6,755.00	21.20	196.40	6,692.10	129.15	-697.27	-129.15	14.90	14.89	-2.00	
6,800.00	24.40	196.70	6,733.58	112.44	-702.23	-112.44	7.12	7.11	0.67	
6,845.00	29.60	189.30	6,773.68	92.55	-706.71	-92.55	13.74	11.56	-16.44	
6,890.00	36.10	189.20	6,811.46	68.47	-710.63	-68.47	14.44	14.44	-0.22	
6,935.00	41.50	189.20	6,846.52	40.65	-715.13	-40.65	12.00	12.00	0.00	
6,980.00	44.40	186.00	6,879.45	10.26	-719.16	-10.26	8.06	6.44	-7.11	
7,025.00	48.20	182.80	6,910.54	-22.16	-721.63	22.16	9.88	8.44	-7.11	
7,070.00	51.20	181.80	6,939.65	-56.45	-723.00	56.45	6.88	6.67	-2.22	
7,115.00	53.60	181.80	6,967.10	-92.08	-724.12	92.08	5.33	5.33	0.00	
7,159.00	57.70	180.40	6,991.92	-128.39	-724.81	128.39	9.68	9.32	-3.18	
7,180.00	60.78	179.39	7,002.66	-146.44	-724.77	146.44	15.22	14.65	-4.83	
Crosses Sec13 1/2 Section 460'Setback										
7,204.00	64.30	178.30	7,013.73	-167.72	-724.34	167.72	15.22	14.68	-4.53	
7,249.00	70.90	176.30	7,030.87	-209.26	-722.36	209.26	15.23	14.67	-4.44	
7,294.00	75.00	176.50	7,044.06	-252.18	-719.66	252.18	9.12	9.11	0.44	
7,339.00	77.70	175.30	7,054.68	-295.80	-716.53	295.80	6.54	6.00	-2.67	
7,384.00	81.10	174.60	7,062.96	-339.85	-712.64	339.85	7.71	7.56	-1.56	
7,428.00	83.00	173.00	7,069.04	-383.17	-707.93	383.17	5.62	4.32	-3.64	

# Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,473.00	84.90	174.40	7,073.78	-427.64	-703.02	427.64	5.23	4.22	3.11
7,508.00	87.00	174.60	7,076.26	-462.39	-699.68	462.39	6.03	6.00	0.57
7,543.00	88.24	175.27	7,077.71	-497.23	-696.59	497.23	4.03	3.54	1.91
7"									
7,618.00	90.90	176.70	7,078.27	-572.03	-691.34	572.03	4.03	3.55	1.91
7,712.00	90.80	179.20	7,076.88	-665.95	-687.97	665.95	2.66	-0.11	2.66
7,805.00	90.70	178.30	7,075.66	-758.92	-685.95	758.92	0.97	-0.11	-0.97
7,898.00	90.50	178.60	7,074.69	-851.88	-683.43	851.88	0.39	-0.22	0.32
7,991.00	90.30	179.30	7,074.04	-944.87	-681.73	944.87	0.78	-0.22	0.75
8,084.00	90.20	179.90	7,073.63	-1,037.86	-681.08	1,037.86	0.65	-0.11	0.65
8,178.00	90.20	178.60	7,073.30	-1,131.85	-679.85	1,131.85	1.38	0.00	-1.38
8,271.00	89.70	179.90	7,073.38	-1,224.84	-678.63	1,224.84	1.50	-0.54	1.40
8,364.00	91.00	180.00	7,072.82	-1,317.84	-678.55	1,317.84	1.40	1.40	0.11
8,457.00	90.20	178.10	7,071.84	-1,410.81	-677.01	1,410.81	2.22	-0.86	-2.04
8,551.00	89.30	179.50	7,072.25	-1,504.79	-675.04	1,504.79	1.77	-0.96	1.49
8,640.00	91.30	179.30	7,071.79	-1,593.78	-674.11	1,593.78	2.26	2.25	-0.22
8,730.00	91.10	179.30	7,069.90	-1,683.75	-673.01	1,683.75	0.22	-0.22	0.00
8,820.00	90.80	179.90	7,068.41	-1,773.74	-672.38	1,773.74	0.75	-0.33	0.67
8,910.00	90.70	179.00	7,067.23	-1,863.72	-671.51	1,863.72	1.01	-0.11	-1.00
8,928.00	90.60	179.14	7,067.03	-1,881.72	-671.22	1,881.72	0.97	-0.56	0.79
Crosses Sec13 South 460'Setback									
8,999.00	90.20	179.70	7,066.53	-1,952.72	-670.50	1,952.72	0.97	-0.56	0.79
9,089.00	90.30	180.90	7,066.14	-2,042.71	-670.98	2,042.71	1.34	0.11	1.33
9,179.00	89.80	181.10	7,066.06	-2,132.70	-672.55	2,132.70	0.60	-0.56	0.22
9,269.00	89.50	181.10	7,066.61	-2,222.68	-674.27	2,222.68	0.33	-0.33	0.00
9,359.00	89.10	180.20	7,067.71	-2,312.67	-675.30	2,312.67	1.09	-0.44	-1.00
9,388.00	88.97	180.49	7,068.20	-2,341.66	-675.47	2,341.66	1.09	-0.44	1.00
Crosses into Sec24									
9,449.00	88.70	181.10	7,069.44	-2,402.64	-676.32	2,402.64	1.09	-0.44	1.00
9,539.00	90.10	180.00	7,070.38	-2,492.63	-677.18	2,492.63	1.98	1.56	-1.22
9,628.00	89.80	181.10	7,070.46	-2,581.62	-678.03	2,581.62	1.28	-0.34	1.24
9,718.00	90.20	180.00	7,070.46	-2,671.62	-678.90	2,671.62	1.30	0.44	-1.22
9,808.00	90.50	177.00	7,069.91	-2,761.57	-676.54	2,761.57	3.35	0.33	-3.33
9,848.00	90.23	177.71	7,069.65	-2,801.53	-674.70	2,801.53	1.90	-0.67	1.78
Crosses Sec24 North 460'Setback									
9,898.00	89.90	178.60	7,069.59	-2,851.50	-673.09	2,851.50	1.90	-0.67	1.78
9,992.00	89.50	179.90	7,070.09	-2,945.49	-671.86	2,945.49	1.45	-0.43	1.38
10,082.00	90.50	178.80	7,070.09	-3,035.48	-670.84	3,035.48	1.65	1.11	-1.22
10,171.00	90.10	179.20	7,069.62	-3,124.47	-669.28	3,124.47	0.64	-0.45	0.45
10,261.00	89.60	176.70	7,069.86	-3,214.40	-666.06	3,214.40	2.83	-0.56	-2.78
10,351.00	90.20	179.90	7,070.01	-3,304.35	-663.39	3,304.35	3.62	0.67	3.56
10,441.00	91.90	180.20	7,068.36	-3,394.33	-663.47	3,394.33	1.92	1.89	0.33
10,531.00	91.60	180.20	7,065.62	-3,484.29	-663.79	3,484.29	0.33	-0.33	0.00
10,621.00	91.10	180.00	7,063.50	-3,574.27	-663.94	3,574.27	0.60	-0.56	-0.22

# Survey Report

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well 13K-243 - Slot 13K-243
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,711.00	90.70	179.20	7,062.08	-3,664.25	-663.32	3,664.25	0.99	-0.44	-0.89
10,801.00	89.80	177.00	7,061.69	-3,754.19	-660.33	3,754.19	2.64	-1.00	-2.44
10,891.00	89.10	177.00	7,062.55	-3,844.07	-655.62	3,844.07	0.78	-0.78	0.00
10,981.00	90.10	177.40	7,063.18	-3,933.96	-651.23	3,933.96	1.20	1.11	0.44
11,071.00	89.80	177.60	7,063.26	-4,023.87	-647.30	4,023.87	0.40	-0.33	0.22
11,161.00	89.20	178.50	7,064.04	-4,113.81	-644.24	4,113.81	1.20	-0.67	1.00
11,251.00	89.50	179.50	7,065.07	-4,203.79	-642.67	4,203.79	1.16	0.33	1.11
11,341.00	88.70	180.90	7,066.48	-4,293.78	-642.98	4,293.78	1.79	-0.89	1.56
11,431.00	89.30	180.00	7,068.05	-4,383.76	-643.69	4,383.76	1.20	0.67	-1.00
11,521.00	90.60	182.80	7,068.13	-4,473.72	-645.89	4,473.72	3.43	1.44	3.11
11,611.00	91.50	182.30	7,066.48	-4,563.62	-649.89	4,563.62	1.14	1.00	-0.56
11,701.00	90.90	183.90	7,064.59	-4,653.46	-654.76	4,653.46	1.90	-0.67	1.78
11,790.00	91.40	182.50	7,062.81	-4,742.30	-659.72	4,742.30	1.67	0.56	-1.57
11,880.00	92.10	182.00	7,060.06	-4,832.19	-663.25	4,832.19	0.96	0.78	-0.56
11,969.00	91.80	179.50	7,057.03	-4,921.12	-664.42	4,921.12	2.83	-0.34	-2.81
12,059.00	91.50	181.40	7,054.44	-5,011.08	-665.13	5,011.08	2.14	-0.33	2.11
12,149.00	91.20	181.40	7,052.32	-5,101.03	-667.32	5,101.03	0.33	-0.33	0.00
12,239.00	90.70	181.80	7,050.83	-5,190.98	-669.84	5,190.98	0.71	-0.56	0.44
12,329.00	90.10	180.90	7,050.20	-5,280.95	-671.96	5,280.95	1.20	-0.67	-1.00
12,419.00	90.20	180.60	7,049.96	-5,370.94	-673.13	5,370.94	0.35	0.11	-0.33
12,509.00	90.40	184.30	7,049.49	-5,460.84	-676.98	5,460.84	4.12	0.22	4.11
12,599.00	90.90	184.10	7,048.47	-5,550.60	-683.57	5,550.60	0.60	0.56	-0.22
12,689.00	90.00	183.00	7,047.76	-5,640.42	-689.14	5,640.42	1.58	-1.00	-1.22
12,779.00	90.30	180.90	7,047.53	-5,730.36	-692.21	5,730.36	2.36	0.33	-2.33
12,869.00	90.10	177.60	7,047.21	-5,820.34	-691.03	5,820.34	3.67	-0.22	-3.67
12,959.00	90.70	178.30	7,046.59	-5,910.28	-687.81	5,910.28	1.02	0.67	0.78
13,049.00	89.60	176.90	7,046.35	-6,000.20	-684.04	6,000.20	1.98	-1.22	-1.56
13,139.00	88.60	177.70	7,047.76	-6,090.08	-679.80	6,090.08	1.42	-1.11	0.89
13,229.00	89.50	179.00	7,049.26	-6,180.03	-677.21	6,180.03	1.76	1.00	1.44
13,319.00	89.70	178.80	7,049.88	-6,270.01	-675.48	6,270.01	0.31	0.22	-0.22
13,409.00	88.80	180.20	7,051.06	-6,360.00	-674.70	6,360.00	1.85	-1.00	1.56
13,499.00	88.40	178.10	7,053.26	-6,449.96	-673.36	6,449.96	2.37	-0.44	-2.33
13,589.00	90.10	181.60	7,054.44	-6,539.93	-673.13	6,539.93	4.32	1.89	3.89
13,679.00	89.40	180.60	7,054.83	-6,629.91	-674.86	6,629.91	1.36	-0.78	-1.11
13,769.00	91.70	180.90	7,053.97	-6,719.89	-676.03	6,719.89	2.58	2.56	0.33
13,859.00	91.20	182.80	7,051.69	-6,809.81	-678.94	6,809.81	2.18	-0.56	2.11
13,949.00	90.50	182.30	7,050.36	-6,899.71	-682.94	6,899.71	0.96	-0.78	-0.56
14,038.00	90.00	180.00	7,049.97	-6,988.69	-684.73	6,988.69	2.64	-0.56	-2.58
14,083.00	89.90	181.10	7,050.01	-7,033.69	-685.16	7,033.69	2.45	-0.22	2.44
14,135.00	89.90	181.10	7,050.10	-7,085.68	-686.16	7,085.68	0.00	0.00	0.00
Stroh 13K-243 PBHL p6									

## Survey Report

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well 13K-243 - Slot 13K-243
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Site:</b>	Stroh 13GK-HZ Pad (True)	<b>MD Reference:</b>	4805+13 @ 4818.00usft (ensign123alt)
<b>Well:</b>	13K-243	<b>North Reference:</b>	True
<b>Wellbore:</b>	Lateral	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral	<b>Database:</b>	EDM 5000.1 Single User Db

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Stroh 13K-243 SL - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,356,827.808	3,183,226.915	40.311030	-104.842975
Stroh 13K-243 BHL - actual wellpath hits target center - Point	0.00	0.00	7,050.10	-7,085.68	-686.16	1,349,737.239	3,182,593.274	40.291579	-104.845434

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
7,543.00	7,077.71	7"		7.00	8.75