



Company: Extraction Oil & Gas
Field: Weld Co., Co
Location: Sec.08-T07N-R66W
Well: Thornton 4
Borehole: Original Hole
Rig: Xtreme 7
Plan: Rev 0

PATHFINDER
A Schlumberger Company

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00
3	1237.30	8.75	321.26	1235.60	25.98	-20.84	2.00	321.26	-19.14
4	6075.73	8.75	321.26	6017.78	599.85	-481.22	0.00	0.00	-441.86
5	6513.03	0.00	0.00	6453.38	625.83	-502.06	2.00	180.00	-461.00
6	6613.03	0.00	0.00	6553.38	625.83	-502.06	0.00	0.00	-461.00
7	7613.03	90.00	90.00	7190.00	625.83	134.56	9.00	90.00	174.31
8	17242.86	90.00	90.00	7190.00	625.83	9764.39	0.00	0.00	9784.42

WELL DETAILS: Thornton 4

+N/-S	+E/-W	GL 5033.00 Northing	KB @ 5049.00usft (Xtreme 7 - 16') Easting	Latitude 40° 35' 9.413 N	Longitude 104° 48' 37.321 W
0.00	0.00	1457046.98	3191541.17		

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
KOP 4	6453.38	625.83	-502.06	Point
LP 4	7190.00	625.83	134.56	Point
PBHL Thornton 4	7190.00	625.83	9764.39	Point

ANNOTATIONS

TVD	MD	Annotation
800.00	800.00	Begin Nudge
1235.60	1237.30	Hold Tangent
6017.77	6075.73	Begin Drop
6453.38	6513.03	Vertical Point
6553.38	6613.03	KOP, Build 9°/100' DLS
7190.00	7613.03	LP, Hold to TD
7190.00	17242.86	PBHL/TD

CASING DETAILS

TVD	MD	Name	Size
7190.00	7613.03	7" Csg	7



Azimuths to Grid North
True North: -0.45°
Magnetic North: 8.05°

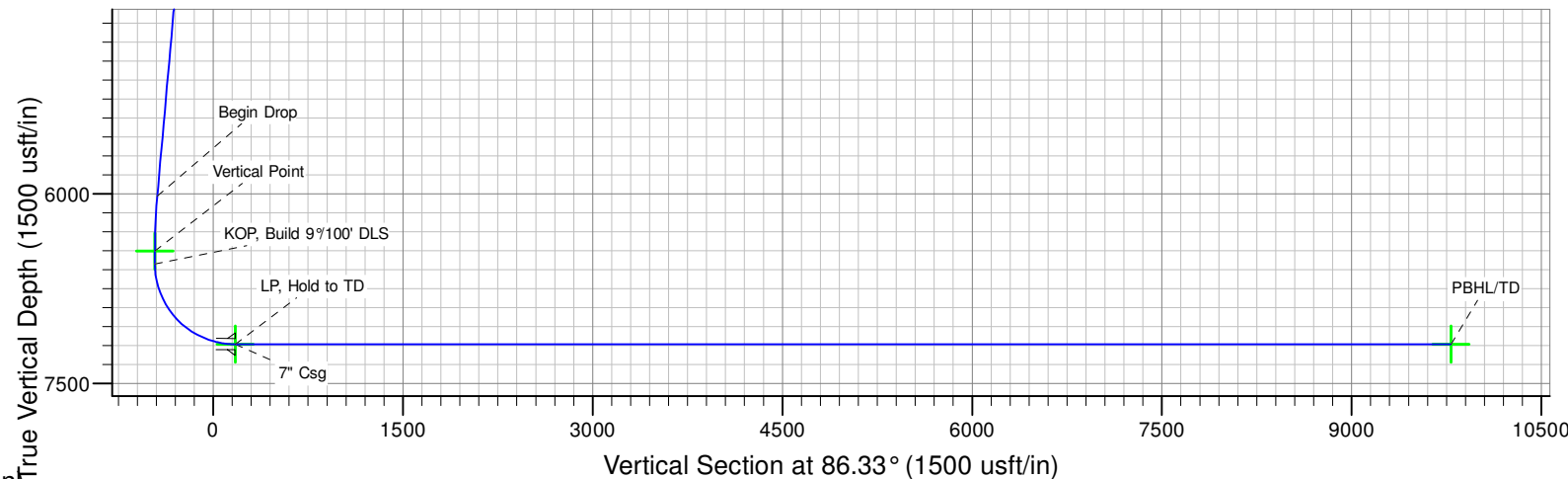
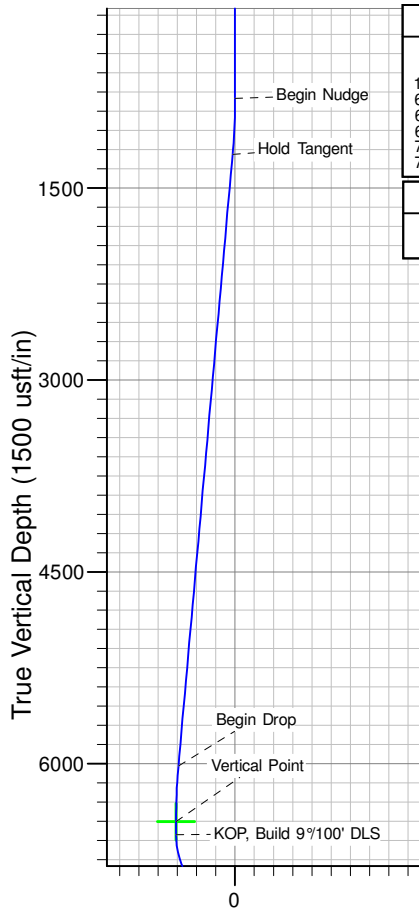
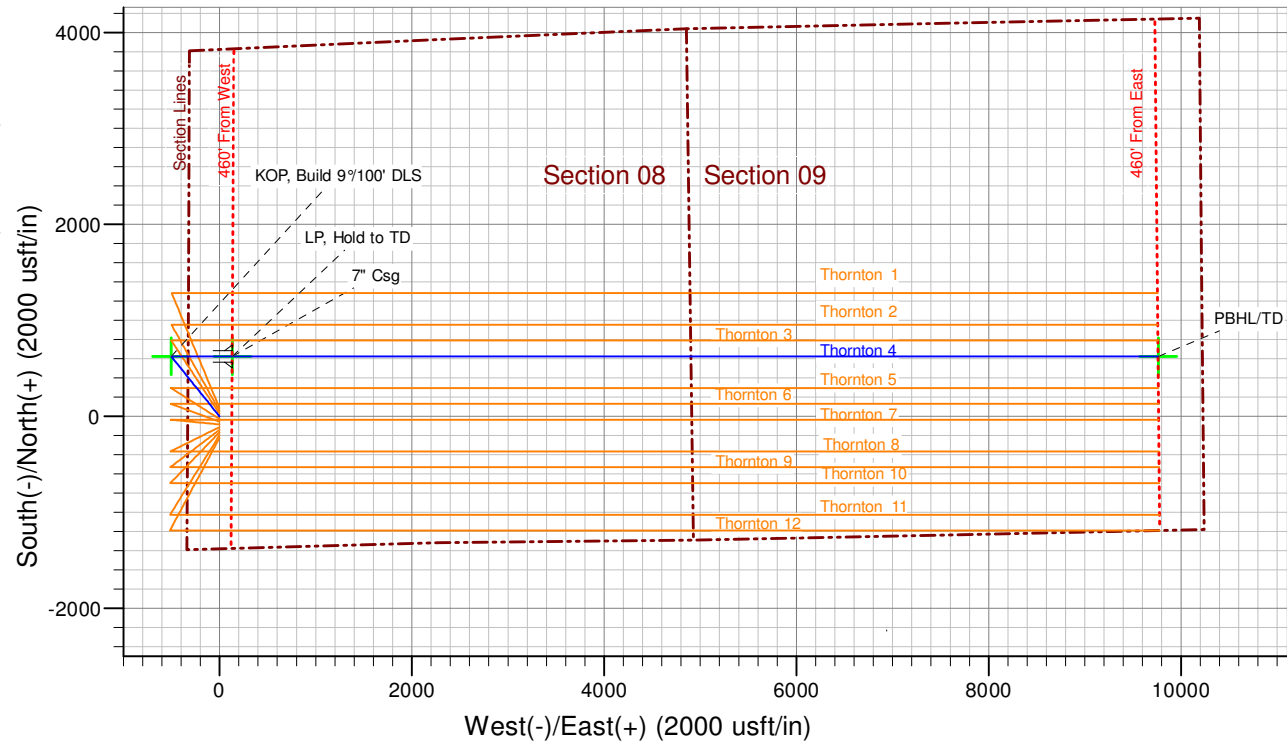
Magnetic Field
Strength: 52904.6nT
Dip Angle: 67.09°
Date: 6/19/2014
Model: IGRF2010

SHL: 1381' FSL & 330' FWL
(Sec.08-T07N-R66W)
PBHL: 1815' FSL & 460' FEL
(Sec.09-T07N-R66W)

Notice:
Section Lines and Hardlines
are estimates only and are
subject to customer approval

Thornton 4 Rev 0

Created By: J Rieke Date: 12:29, June 21 2014





Extraction Oil & Gas

**Weld Co., Co
Sec.08-T07N-R66W
Thornton 4**

Original Hole

Plan: Rev 0

Standard Planning Report

21 June, 2014



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 4
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

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.08-T07N-R66W			
Site Position:		Northing:	1,457,130.79 usft	Latitude: 40° 35' 10.241 N
From:	Lat/Long	Easting:	3,191,541.35 usft	Longitude: 104° 48' 37.310 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.45 °

Well	Thornton 4			
Well Position	+N/-S	-83.80 usft	Northing:	1,457,046.98 usft
	+E/-W	-0.18 usft	Easting:	3,191,541.17 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	5,049.00 usft	Ground Level: 5,033.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/19/2014	8.50	67.09	52,905

Design	Rev 0			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	86.33

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,237.30	8.75	321.26	1,235.60	25.98	-20.84	2.00	2.00	0.00	321.26	
6,075.73	8.75	321.26	6,017.78	599.85	-481.22	0.00	0.00	0.00	0.00	
6,513.03	0.00	0.00	6,453.38	625.83	-502.06	2.00	-2.00	0.00	180.00	KOP 4
6,613.03	0.00	0.00	6,553.38	625.83	-502.06	0.00	0.00	0.00	0.00	
7,613.03	90.00	90.00	7,190.00	625.83	134.56	9.00	9.00	0.00	90.00	LP 4
17,242.86	90.00	90.00	7,190.00	625.83	9,764.39	0.00	0.00	0.00	0.00	PBHL Thornton 4



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 4
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge									
900.00	2.00	321.26	899.98	1.36	-1.09	-1.00	2.00	2.00	0.00
1,000.00	4.00	321.26	999.84	5.44	-4.37	-4.01	2.00	2.00	0.00
1,100.00	6.00	321.26	1,099.45	12.24	-9.82	-9.02	2.00	2.00	0.00
1,200.00	8.00	321.26	1,198.70	21.75	-17.45	-16.02	2.00	2.00	0.00
1,237.30	8.75	321.26	1,235.60	25.98	-20.84	-19.14	2.00	2.00	0.00
Hold Tangent									
1,300.00	8.75	321.26	1,297.57	33.42	-26.81	-24.62	0.00	0.00	0.00
1,400.00	8.75	321.26	1,396.41	45.28	-36.33	-33.35	0.00	0.00	0.00
1,500.00	8.75	321.26	1,495.25	57.14	-45.84	-42.09	0.00	0.00	0.00
1,600.00	8.75	321.26	1,594.09	69.00	-55.36	-50.83	0.00	0.00	0.00
1,700.00	8.75	321.26	1,692.92	80.86	-64.87	-59.57	0.00	0.00	0.00
1,800.00	8.75	321.26	1,791.76	92.72	-74.38	-68.30	0.00	0.00	0.00
1,900.00	8.75	321.26	1,890.60	104.58	-83.90	-77.04	0.00	0.00	0.00
2,000.00	8.75	321.26	1,989.44	116.44	-93.41	-85.78	0.00	0.00	0.00
2,100.00	8.75	321.26	2,088.27	128.30	-102.93	-94.51	0.00	0.00	0.00
2,200.00	8.75	321.26	2,187.11	140.16	-112.44	-103.25	0.00	0.00	0.00
2,300.00	8.75	321.26	2,285.95	152.03	-121.96	-111.99	0.00	0.00	0.00
2,400.00	8.75	321.26	2,384.78	163.89	-131.47	-120.72	0.00	0.00	0.00
2,500.00	8.75	321.26	2,483.62	175.75	-140.99	-129.46	0.00	0.00	0.00
2,600.00	8.75	321.26	2,582.46	187.61	-150.50	-138.20	0.00	0.00	0.00
2,700.00	8.75	321.26	2,681.30	199.47	-160.02	-146.93	0.00	0.00	0.00
2,800.00	8.75	321.26	2,780.13	211.33	-169.53	-155.67	0.00	0.00	0.00
2,900.00	8.75	321.26	2,878.97	223.19	-179.05	-164.41	0.00	0.00	0.00
3,000.00	8.75	321.26	2,977.81	235.05	-188.56	-173.14	0.00	0.00	0.00
3,100.00	8.75	321.26	3,076.64	246.91	-198.08	-181.88	0.00	0.00	0.00
3,200.00	8.75	321.26	3,175.48	258.77	-207.59	-190.62	0.00	0.00	0.00
3,300.00	8.75	321.26	3,274.32	270.63	-217.11	-199.35	0.00	0.00	0.00
3,400.00	8.75	321.26	3,373.16	282.49	-226.62	-208.09	0.00	0.00	0.00
3,500.00	8.75	321.26	3,471.99	294.35	-236.14	-216.83	0.00	0.00	0.00
3,600.00	8.75	321.26	3,570.83	306.21	-245.65	-225.56	0.00	0.00	0.00
3,700.00	8.75	321.26	3,669.67	318.07	-255.17	-234.30	0.00	0.00	0.00
3,800.00	8.75	321.26	3,768.51	329.93	-264.68	-243.04	0.00	0.00	0.00
3,900.00	8.75	321.26	3,867.34	341.79	-274.20	-251.77	0.00	0.00	0.00
3,943.16	8.75	321.26	3,910.00	346.91	-278.30	-255.54	0.00	0.00	0.00
Parkman									
4,000.00	8.75	321.26	3,966.18	353.65	-283.71	-260.51	0.00	0.00	0.00
4,100.00	8.75	321.26	4,065.02	365.51	-293.23	-269.25	0.00	0.00	0.00
4,200.00	8.75	321.26	4,163.85	377.37	-302.74	-277.98	0.00	0.00	0.00
4,300.00	8.75	321.26	4,262.69	389.24	-312.26	-286.72	0.00	0.00	0.00
4,400.00	8.75	321.26	4,361.53	401.10	-321.77	-295.46	0.00	0.00	0.00
4,500.00	8.75	321.26	4,460.37	412.96	-331.29	-304.19	0.00	0.00	0.00
4,600.00	8.75	321.26	4,559.20	424.82	-340.80	-312.93	0.00	0.00	0.00
4,684.78	8.75	321.26	4,643.00	434.87	-348.87	-320.34	0.00	0.00	0.00
Sussex									



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 4
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Planned 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)
4,700.00	8.75	321.26	4,658.04	436.68	-350.32	-321.67	0.00	0.00	0.00
4,800.00	8.75	321.26	4,756.88	448.54	-359.83	-330.40	0.00	0.00	0.00
4,900.00	8.75	321.26	4,855.71	460.40	-369.35	-339.14	0.00	0.00	0.00
5,000.00	8.75	321.26	4,954.55	472.26	-378.86	-347.88	0.00	0.00	0.00
5,100.00	8.75	321.26	5,053.39	484.12	-388.38	-356.62	0.00	0.00	0.00
5,111.75	8.75	321.26	5,065.00	485.51	-389.49	-357.64	0.00	0.00	0.00
Shannon									
5,200.00	8.75	321.26	5,152.23	495.98	-397.89	-365.35	0.00	0.00	0.00
5,300.00	8.75	321.26	5,251.06	507.84	-407.41	-374.09	0.00	0.00	0.00
5,400.00	8.75	321.26	5,349.90	519.70	-416.92	-382.83	0.00	0.00	0.00
5,500.00	8.75	321.26	5,448.74	531.56	-426.43	-391.56	0.00	0.00	0.00
5,600.00	8.75	321.26	5,547.58	543.42	-435.95	-400.30	0.00	0.00	0.00
5,700.00	8.75	321.26	5,646.41	555.28	-445.46	-409.04	0.00	0.00	0.00
5,800.00	8.75	321.26	5,745.25	567.14	-454.98	-417.77	0.00	0.00	0.00
5,900.00	8.75	321.26	5,844.09	579.00	-464.49	-426.51	0.00	0.00	0.00
6,000.00	8.75	321.26	5,942.92	590.86	-474.01	-435.25	0.00	0.00	0.00
6,075.73	8.75	321.26	6,017.77	599.85	-481.21	-441.86	0.00	0.00	0.00
Begin Drop									
6,100.00	8.26	321.26	6,041.78	602.65	-483.46	-443.92	2.00	-2.00	0.00
6,200.00	6.26	321.26	6,140.97	612.50	-491.37	-451.19	2.00	-2.00	0.00
6,300.00	4.26	321.26	6,240.54	619.65	-497.11	-456.45	2.00	-2.00	0.00
6,400.00	2.26	321.26	6,340.38	624.09	-500.66	-459.72	2.00	-2.00	0.00
6,500.00	0.26	321.26	6,440.35	625.81	-502.04	-460.99	2.00	-2.00	0.00
6,513.03	0.00	0.00	6,453.38	625.83	-502.06	-461.00	2.00	-2.00	297.30
Vertical Point									
6,600.00	0.00	0.00	6,540.35	625.83	-502.06	-461.00	0.00	0.00	0.00
6,613.03	0.00	0.00	6,553.38	625.83	-502.06	-461.00	0.00	0.00	0.00
KOP, Build 9°/100' DLS									
6,700.00	7.83	90.00	6,640.08	625.83	-496.13	-455.08	9.00	9.00	0.00
6,800.00	16.83	90.00	6,737.67	625.83	-474.80	-433.80	9.00	9.00	0.00
6,900.00	25.83	90.00	6,830.73	625.83	-438.47	-397.54	9.00	9.00	0.00
7,000.00	34.83	90.00	6,916.95	625.83	-388.03	-347.20	9.00	9.00	0.00
7,100.00	43.83	90.00	6,994.23	625.83	-324.72	-284.02	9.00	9.00	0.00
7,200.00	52.83	90.00	7,060.65	625.83	-250.10	-209.56	9.00	9.00	0.00
7,300.00	61.83	90.00	7,114.58	625.83	-166.01	-125.64	9.00	9.00	0.00
7,400.00	70.83	90.00	7,154.69	625.83	-74.52	-34.34	9.00	9.00	0.00
7,500.00	79.83	90.00	7,179.99	625.83	22.12	62.10	9.00	9.00	0.00
7,600.00	88.83	90.00	7,189.87	625.83	121.53	161.31	9.00	9.00	0.00
7,613.03	90.00	90.00	7,190.00	625.83	134.56	174.31	9.00	9.00	0.00
LP, Hold to TD - Niobrara - 7" Csg									
7,700.00	90.00	90.00	7,190.00	625.83	221.53	261.10	0.00	0.00	0.00
7,800.00	90.00	90.00	7,190.00	625.83	321.53	360.90	0.00	0.00	0.00
7,900.00	90.00	90.00	7,190.00	625.83	421.53	460.69	0.00	0.00	0.00
8,000.00	90.00	90.00	7,190.00	625.83	521.53	560.49	0.00	0.00	0.00
8,100.00	90.00	90.00	7,190.00	625.83	621.53	660.28	0.00	0.00	0.00
8,200.00	90.00	90.00	7,190.00	625.83	721.53	760.08	0.00	0.00	0.00
8,300.00	90.00	90.00	7,190.00	625.83	821.53	859.87	0.00	0.00	0.00
8,400.00	90.00	90.00	7,190.00	625.83	921.53	959.67	0.00	0.00	0.00
8,500.00	90.00	90.00	7,190.00	625.83	1,021.53	1,059.46	0.00	0.00	0.00
8,600.00	90.00	90.00	7,190.00	625.83	1,121.53	1,159.26	0.00	0.00	0.00
8,700.00	90.00	90.00	7,190.00	625.83	1,221.53	1,259.05	0.00	0.00	0.00
8,800.00	90.00	90.00	7,190.00	625.83	1,321.53	1,358.85	0.00	0.00	0.00
8,900.00	90.00	90.00	7,190.00	625.83	1,421.53	1,458.65	0.00	0.00	0.00



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Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Planned 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)	
9,000.00	90.00	90.00	7,190.00	625.83	1,521.53	1,558.44	0.00	0.00	0.00	
9,100.00	90.00	90.00	7,190.00	625.83	1,621.53	1,658.24	0.00	0.00	0.00	
9,200.00	90.00	90.00	7,190.00	625.83	1,721.53	1,758.03	0.00	0.00	0.00	
9,300.00	90.00	90.00	7,190.00	625.83	1,821.53	1,857.83	0.00	0.00	0.00	
9,400.00	90.00	90.00	7,190.00	625.83	1,921.53	1,957.62	0.00	0.00	0.00	
9,500.00	90.00	90.00	7,190.00	625.83	2,021.53	2,057.42	0.00	0.00	0.00	
9,600.00	90.00	90.00	7,190.00	625.83	2,121.53	2,157.21	0.00	0.00	0.00	
9,700.00	90.00	90.00	7,190.00	625.83	2,221.53	2,257.01	0.00	0.00	0.00	
9,800.00	90.00	90.00	7,190.00	625.83	2,321.53	2,356.80	0.00	0.00	0.00	
9,900.00	90.00	90.00	7,190.00	625.83	2,421.53	2,456.60	0.00	0.00	0.00	
10,000.00	90.00	90.00	7,190.00	625.83	2,521.53	2,556.39	0.00	0.00	0.00	
10,100.00	90.00	90.00	7,190.00	625.83	2,621.53	2,656.19	0.00	0.00	0.00	
10,200.00	90.00	90.00	7,190.00	625.83	2,721.53	2,755.98	0.00	0.00	0.00	
10,300.00	90.00	90.00	7,190.00	625.83	2,821.53	2,855.78	0.00	0.00	0.00	
10,400.00	90.00	90.00	7,190.00	625.83	2,921.53	2,955.57	0.00	0.00	0.00	
10,500.00	90.00	90.00	7,190.00	625.83	3,021.53	3,055.37	0.00	0.00	0.00	
10,600.00	90.00	90.00	7,190.00	625.83	3,121.53	3,155.16	0.00	0.00	0.00	
10,700.00	90.00	90.00	7,190.00	625.83	3,221.53	3,254.96	0.00	0.00	0.00	
10,800.00	90.00	90.00	7,190.00	625.83	3,321.53	3,354.75	0.00	0.00	0.00	
10,900.00	90.00	90.00	7,190.00	625.83	3,421.53	3,454.55	0.00	0.00	0.00	
11,000.00	90.00	90.00	7,190.00	625.83	3,521.53	3,554.35	0.00	0.00	0.00	
11,100.00	90.00	90.00	7,190.00	625.83	3,621.53	3,654.14	0.00	0.00	0.00	
11,200.00	90.00	90.00	7,190.00	625.83	3,721.53	3,753.94	0.00	0.00	0.00	
11,300.00	90.00	90.00	7,190.00	625.83	3,821.53	3,853.73	0.00	0.00	0.00	
11,400.00	90.00	90.00	7,190.00	625.83	3,921.53	3,953.53	0.00	0.00	0.00	
11,500.00	90.00	90.00	7,190.00	625.83	4,021.53	4,053.32	0.00	0.00	0.00	
11,600.00	90.00	90.00	7,190.00	625.83	4,121.53	4,153.12	0.00	0.00	0.00	
11,700.00	90.00	90.00	7,190.00	625.83	4,221.53	4,252.91	0.00	0.00	0.00	
11,800.00	90.00	90.00	7,190.00	625.83	4,321.53	4,352.71	0.00	0.00	0.00	
11,900.00	90.00	90.00	7,190.00	625.83	4,421.53	4,452.50	0.00	0.00	0.00	
12,000.00	90.00	90.00	7,190.00	625.83	4,521.53	4,552.30	0.00	0.00	0.00	
12,100.00	90.00	90.00	7,190.00	625.83	4,621.53	4,652.09	0.00	0.00	0.00	
12,200.00	90.00	90.00	7,190.00	625.83	4,721.53	4,751.89	0.00	0.00	0.00	
12,300.00	90.00	90.00	7,190.00	625.83	4,821.53	4,851.68	0.00	0.00	0.00	
12,400.00	90.00	90.00	7,190.00	625.83	4,921.53	4,951.48	0.00	0.00	0.00	
12,500.00	90.00	90.00	7,190.00	625.83	5,021.53	5,051.27	0.00	0.00	0.00	
12,600.00	90.00	90.00	7,190.00	625.83	5,121.53	5,151.07	0.00	0.00	0.00	
12,700.00	90.00	90.00	7,190.00	625.83	5,221.53	5,250.86	0.00	0.00	0.00	
12,800.00	90.00	90.00	7,190.00	625.83	5,321.53	5,350.66	0.00	0.00	0.00	
12,900.00	90.00	90.00	7,190.00	625.83	5,421.53	5,450.45	0.00	0.00	0.00	
13,000.00	90.00	90.00	7,190.00	625.83	5,521.53	5,550.25	0.00	0.00	0.00	
13,100.00	90.00	90.00	7,190.00	625.83	5,621.53	5,650.05	0.00	0.00	0.00	
13,200.00	90.00	90.00	7,190.00	625.83	5,721.53	5,749.84	0.00	0.00	0.00	
13,300.00	90.00	90.00	7,190.00	625.83	5,821.53	5,849.64	0.00	0.00	0.00	
13,400.00	90.00	90.00	7,190.00	625.83	5,921.53	5,949.43	0.00	0.00	0.00	
13,500.00	90.00	90.00	7,190.00	625.83	6,021.53	6,049.23	0.00	0.00	0.00	
13,600.00	90.00	90.00	7,190.00	625.83	6,121.53	6,149.02	0.00	0.00	0.00	
13,700.00	90.00	90.00	7,190.00	625.83	6,221.53	6,248.82	0.00	0.00	0.00	
13,800.00	90.00	90.00	7,190.00	625.83	6,321.53	6,348.61	0.00	0.00	0.00	
13,900.00	90.00	90.00	7,190.00	625.83	6,421.53	6,448.41	0.00	0.00	0.00	
14,000.00	90.00	90.00	7,190.00	625.83	6,521.53	6,548.20	0.00	0.00	0.00	
14,100.00	90.00	90.00	7,190.00	625.83	6,621.53	6,648.00	0.00	0.00	0.00	
14,200.00	90.00	90.00	7,190.00	625.83	6,721.53	6,747.79	0.00	0.00	0.00	
14,300.00	90.00	90.00	7,190.00	625.83	6,821.53	6,847.59	0.00	0.00	0.00	



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 4
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Planned 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)	
14,400.00	90.00	90.00	7,190.00	625.83	6,921.53	6,947.38	0.00	0.00	0.00	
14,500.00	90.00	90.00	7,190.00	625.83	7,021.53	7,047.18	0.00	0.00	0.00	
14,600.00	90.00	90.00	7,190.00	625.83	7,121.53	7,146.97	0.00	0.00	0.00	
14,700.00	90.00	90.00	7,190.00	625.83	7,221.53	7,246.77	0.00	0.00	0.00	
14,800.00	90.00	90.00	7,190.00	625.83	7,321.53	7,346.56	0.00	0.00	0.00	
14,900.00	90.00	90.00	7,190.00	625.83	7,421.53	7,446.36	0.00	0.00	0.00	
15,000.00	90.00	90.00	7,190.00	625.83	7,521.53	7,546.15	0.00	0.00	0.00	
15,100.00	90.00	90.00	7,190.00	625.83	7,621.53	7,645.95	0.00	0.00	0.00	
15,200.00	90.00	90.00	7,190.00	625.83	7,721.53	7,745.75	0.00	0.00	0.00	
15,300.00	90.00	90.00	7,190.00	625.83	7,821.53	7,845.54	0.00	0.00	0.00	
15,400.00	90.00	90.00	7,190.00	625.83	7,921.53	7,945.34	0.00	0.00	0.00	
15,500.00	90.00	90.00	7,190.00	625.83	8,021.53	8,045.13	0.00	0.00	0.00	
15,600.00	90.00	90.00	7,190.00	625.83	8,121.53	8,144.93	0.00	0.00	0.00	
15,700.00	90.00	90.00	7,190.00	625.83	8,221.53	8,244.72	0.00	0.00	0.00	
15,800.00	90.00	90.00	7,190.00	625.83	8,321.53	8,344.52	0.00	0.00	0.00	
15,900.00	90.00	90.00	7,190.00	625.83	8,421.53	8,444.31	0.00	0.00	0.00	
16,000.00	90.00	90.00	7,190.00	625.83	8,521.53	8,544.11	0.00	0.00	0.00	
16,100.00	90.00	90.00	7,190.00	625.83	8,621.53	8,643.90	0.00	0.00	0.00	
16,200.00	90.00	90.00	7,190.00	625.83	8,721.53	8,743.70	0.00	0.00	0.00	
16,300.00	90.00	90.00	7,190.00	625.83	8,821.53	8,843.49	0.00	0.00	0.00	
16,400.00	90.00	90.00	7,190.00	625.83	8,921.53	8,943.29	0.00	0.00	0.00	
16,500.00	90.00	90.00	7,190.00	625.83	9,021.53	9,043.08	0.00	0.00	0.00	
16,600.00	90.00	90.00	7,190.00	625.83	9,121.53	9,142.88	0.00	0.00	0.00	
16,700.00	90.00	90.00	7,190.00	625.83	9,221.53	9,242.67	0.00	0.00	0.00	
16,800.00	90.00	90.00	7,190.00	625.83	9,321.53	9,342.47	0.00	0.00	0.00	
16,900.00	90.00	90.00	7,190.00	625.83	9,421.53	9,442.26	0.00	0.00	0.00	
17,000.00	90.00	90.00	7,190.00	625.83	9,521.53	9,542.06	0.00	0.00	0.00	
17,100.00	90.00	90.00	7,190.00	625.83	9,621.53	9,641.85	0.00	0.00	0.00	
17,200.00	90.00	90.00	7,190.00	625.83	9,721.53	9,741.65	0.00	0.00	0.00	
17,242.86	90.00	90.00	7,190.00	625.83	9,764.39	9,784.42	0.00	0.00	0.00	
PBHL/TD										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP 4 - hit/miss target - Shape - Point	0.00	0.00	6,453.38	625.83	-502.06	1,457,672.81	3,191,039.11	40° 35' 15.635 N	104° 48' 43.766 W
LP 4 - plan hits target center - Point	0.00	0.00	7,190.00	625.83	134.56	1,457,672.81	3,191,675.73	40° 35' 15.586 N	104° 48' 35.514 W
PBHL Thornton 4 - plan hits target center - Point	0.00	0.00	7,190.00	625.83	9,764.39	1,457,672.81	3,201,305.55	40° 35' 14.827 N	104° 46' 30.698 W



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 4
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 4	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
7,613.03	7,190.00	7" Csg	7	7-1/2	

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,943.16	3,910.00	Parkman		0.00	
4,684.78	4,643.00	Sussex		0.00	
5,111.75	5,065.00	Shannon		0.00	
7,613.03	7,190.00	Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
800.00	800.00	0.00	0.00	Begin Nudge	
1,237.30	1,235.60	25.98	-20.84	Hold Tangent	
6,075.73	6,017.77	599.85	-481.21	Begin Drop	
6,513.03	6,453.38	625.83	-502.06	Vertical Point	
6,613.03	6,553.38	625.83	-502.06	KOP, Build 9°/100' DLS	
7,613.03	7,190.00	625.83	134.56	LP, Hold to TD	
17,242.86	7,190.00	625.83	9,764.39	PBHL/TD	