



Company: Extraction Oil & Gas
Field: Weld Co., Co
Location: Sec.08-T07N-R66W
Well: Thornton 11
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	700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00
3	1228.56	10.57	211.83	1225.57	-41.31	-25.64	2.00	211.83	-22.06
4	6011.99	10.57	211.83	5927.81	-786.93	-488.43	0.00	0.00	-420.29
5	6540.55	0.00	0.00	6453.38	-828.24	-514.07	2.00	180.00	-442.36
6	6640.55	0.00	0.00	6553.38	-828.24	-514.07	0.00	0.00	-442.36
7	7640.55	90.00	90.00	7190.00	-828.24	122.55	9.00	90.00	191.99
8	17297.69	90.00	90.00	7190.00	-828.07	9779.68	0.00	-90.07	9814.68

WELL DETAILS: Thornton 11

+N/-S	+E/-W	GL 5038.00	KB @ 5054.00usft (Xtreme 7 - 16')	Latitude	Longitude
0.00	0.00	1456850.97	3191541.30	40° 35' 7.476 N	104° 48' 37.339 W

WELLBORE TARGET DETAILS

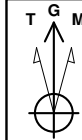
Name	TVD	+N/-S	+E/-W	Shape
KOP 11	6453.38	-828.24	-514.07	Point
LP 11	7190.00	-828.24	122.55	Point
PBHL Thornton 11	7190.00	-828.07	9779.68	Point

ANNOTATIONS

TVD	MD	Annotation
700.00	700.00	Begin Nudge
1225.57	1228.56	Hold Tangent
5927.81	6011.99	Begin Drop
6453.38	6540.55	Vertical Point
6553.38	6640.55	KOP, Build 9°/100' DLS
7190.00	7640.55	LP, Hold to TD
7190.00	17297.69	PBHL/TD

CASING DETAILS

TVD	MD	Name	Size
7190.00	7640.55	7" Csg	7



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

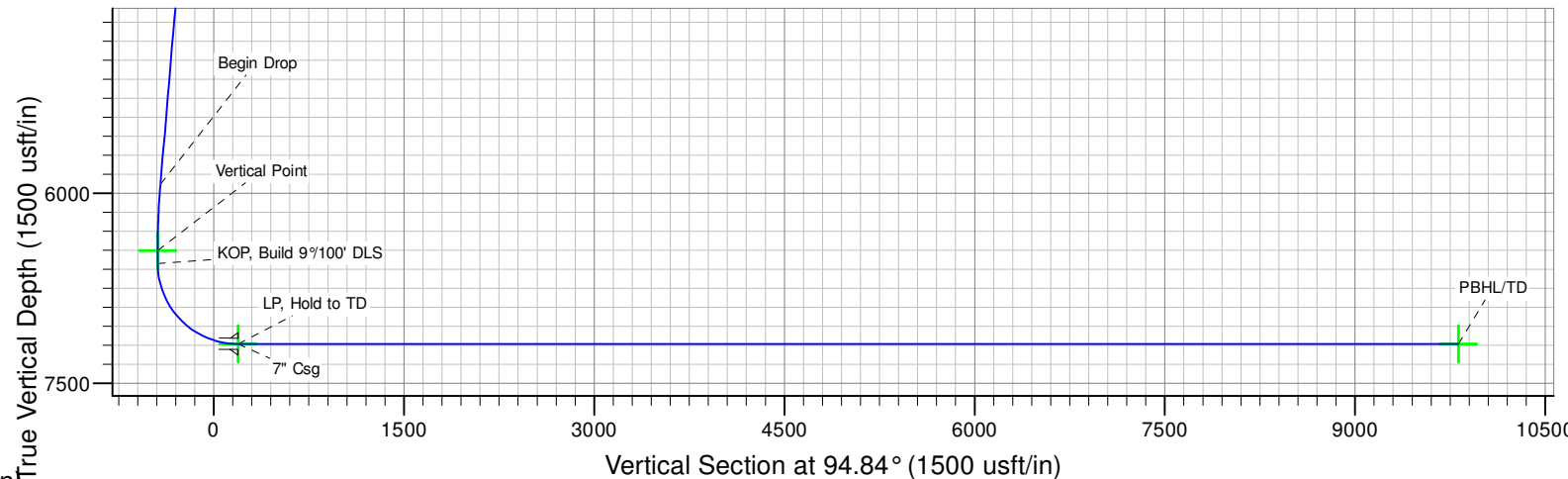
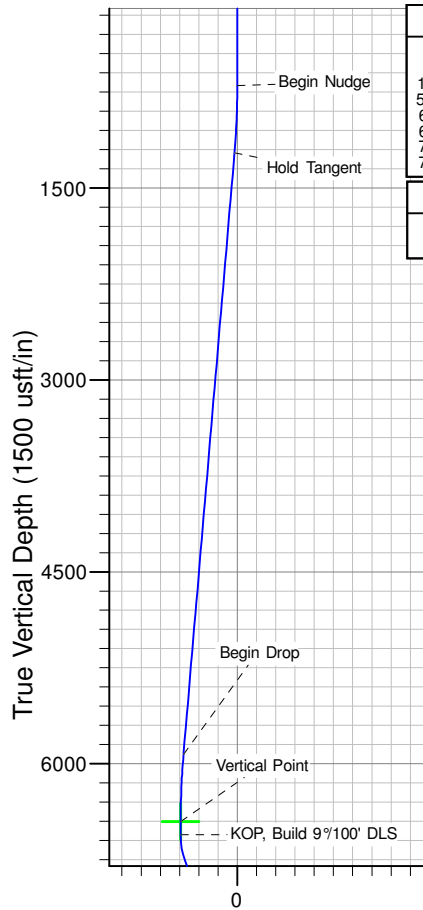
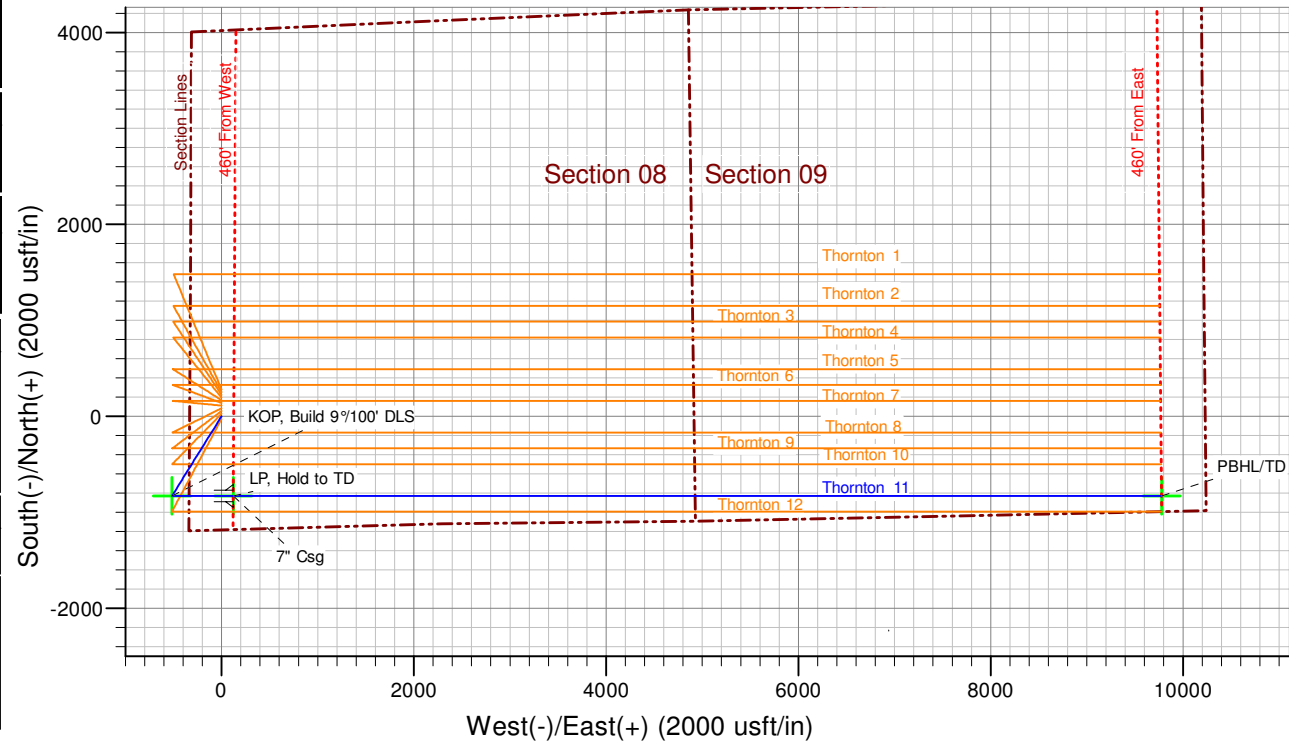
Magnetic Field
Strength: 52904.0nT
Dip Angle: 67.09°
Date: 6/20/2014
Model: IGRF2010

SHL: 1185' FSL & 331' FWL
(Sec.08-T07N-R66W)
PBHL: 165' FSL & 460' FEL
(Sec.09-T07N-R66W)

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

Thornton 11 Rev 0

Created By: J Rieke Date: 13:19, June 21 2014





Extraction Oil & Gas

**Weld Co., Co
Sec.08-T07N-R66W
Thornton 11**

Original Hole

Plan: Rev 0

Standard Planning Report

21 June, 2014



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	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 11			
Well Position	+N/-S	-279.81 usft	Northing:	1,456,850.98 usft
	+E/-W	-0.05 usft	Easting:	3,191,541.30 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	5,054.00 usft
			Ground Level:	5,038.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/20/2014	8.50	67.09	52,904

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	94.84

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	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,228.56	10.57	211.83	1,225.57	-41.31	-25.64	2.00	2.00	0.00	211.83	
6,011.99	10.57	211.83	5,927.81	-786.93	-488.43	0.00	0.00	0.00	0.00	
6,540.55	0.00	0.00	6,453.38	-828.24	-514.07	2.00	-2.00	0.00	180.00	KOP 11
6,640.55	0.00	0.00	6,553.38	-828.24	-514.07	0.00	0.00	0.00	0.00	
7,640.55	90.00	90.00	7,190.00	-828.24	122.55	9.00	9.00	0.00	90.00	
17,297.69	90.00	90.00	7,190.00	-828.07	9,779.68	0.00	0.00	0.00	-90.07	PBHL Thornton 11



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	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
Begin Nudge									
800.00	2.00	211.83	799.98	-1.48	-0.92	-0.79	2.00	2.00	0.00
900.00	4.00	211.83	899.84	-5.93	-3.68	-3.17	2.00	2.00	0.00
1,000.00	6.00	211.83	999.45	-13.33	-8.28	-7.12	2.00	2.00	0.00
1,100.00	8.00	211.83	1,098.70	-23.69	-14.70	-12.65	2.00	2.00	0.00
1,200.00	10.00	211.83	1,197.47	-36.98	-22.95	-19.75	2.00	2.00	0.00
1,228.56	10.57	211.83	1,225.57	-41.31	-25.64	-22.06	2.00	2.00	0.00
Hold Tangent									
1,300.00	10.57	211.83	1,295.79	-52.45	-32.55	-28.01	0.00	0.00	0.00
1,400.00	10.57	211.83	1,394.10	-68.03	-42.23	-36.34	0.00	0.00	0.00
1,500.00	10.57	211.83	1,492.40	-83.62	-51.90	-44.66	0.00	0.00	0.00
1,600.00	10.57	211.83	1,590.70	-99.21	-61.58	-52.99	0.00	0.00	0.00
1,700.00	10.57	211.83	1,689.00	-114.80	-71.25	-61.31	0.00	0.00	0.00
1,800.00	10.57	211.83	1,787.31	-130.38	-80.93	-69.64	0.00	0.00	0.00
1,900.00	10.57	211.83	1,885.61	-145.97	-90.60	-77.96	0.00	0.00	0.00
2,000.00	10.57	211.83	1,983.91	-161.56	-100.28	-86.29	0.00	0.00	0.00
2,100.00	10.57	211.83	2,082.22	-177.15	-109.95	-94.61	0.00	0.00	0.00
2,200.00	10.57	211.83	2,180.52	-192.73	-119.63	-102.94	0.00	0.00	0.00
2,300.00	10.57	211.83	2,278.82	-208.32	-129.30	-111.26	0.00	0.00	0.00
2,400.00	10.57	211.83	2,377.12	-223.91	-138.98	-119.59	0.00	0.00	0.00
2,500.00	10.57	211.83	2,475.43	-239.50	-148.65	-127.91	0.00	0.00	0.00
2,600.00	10.57	211.83	2,573.73	-255.08	-158.33	-136.24	0.00	0.00	0.00
2,700.00	10.57	211.83	2,672.03	-270.67	-168.00	-144.56	0.00	0.00	0.00
2,800.00	10.57	211.83	2,770.33	-286.26	-177.67	-152.89	0.00	0.00	0.00
2,900.00	10.57	211.83	2,868.64	-301.85	-187.35	-161.21	0.00	0.00	0.00
3,000.00	10.57	211.83	2,966.94	-317.43	-197.02	-169.54	0.00	0.00	0.00
3,100.00	10.57	211.83	3,065.24	-333.02	-206.70	-177.86	0.00	0.00	0.00
3,200.00	10.57	211.83	3,163.55	-348.61	-216.37	-186.19	0.00	0.00	0.00
3,300.00	10.57	211.83	3,261.85	-364.20	-226.05	-194.52	0.00	0.00	0.00
3,400.00	10.57	211.83	3,360.15	-379.78	-235.72	-202.84	0.00	0.00	0.00
3,500.00	10.57	211.83	3,458.45	-395.37	-245.40	-211.17	0.00	0.00	0.00
3,600.00	10.57	211.83	3,556.76	-410.96	-255.07	-219.49	0.00	0.00	0.00
3,700.00	10.57	211.83	3,655.06	-426.55	-264.75	-227.82	0.00	0.00	0.00
3,800.00	10.57	211.83	3,753.36	-442.13	-274.42	-236.14	0.00	0.00	0.00
3,900.00	10.57	211.83	3,851.67	-457.72	-284.10	-244.47	0.00	0.00	0.00
3,959.34	10.57	211.83	3,910.00	-466.97	-289.84	-249.41	0.00	0.00	0.00
Parkman									
4,000.00	10.57	211.83	3,949.97	-473.31	-293.77	-252.79	0.00	0.00	0.00
4,100.00	10.57	211.83	4,048.27	-488.90	-303.45	-261.12	0.00	0.00	0.00
4,200.00	10.57	211.83	4,146.57	-504.48	-313.12	-269.44	0.00	0.00	0.00
4,300.00	10.57	211.83	4,244.88	-520.07	-322.80	-277.77	0.00	0.00	0.00
4,400.00	10.57	211.83	4,343.18	-535.66	-332.47	-286.09	0.00	0.00	0.00
4,500.00	10.57	211.83	4,441.48	-551.25	-342.15	-294.42	0.00	0.00	0.00
4,600.00	10.57	211.83	4,539.78	-566.83	-351.82	-302.74	0.00	0.00	0.00
4,700.00	10.57	211.83	4,638.09	-582.42	-361.50	-311.07	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	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)
4,705.00	10.57	211.83	4,643.00	-583.20	-361.98	-311.48	0.00	0.00	0.00
Sussex									
4,800.00	10.57	211.83	4,736.39	-598.01	-371.17	-319.39	0.00	0.00	0.00
4,900.00	10.57	211.83	4,834.69	-613.60	-380.85	-327.72	0.00	0.00	0.00
5,000.00	10.57	211.83	4,933.00	-629.18	-390.52	-336.04	0.00	0.00	0.00
5,100.00	10.57	211.83	5,031.30	-644.77	-400.20	-344.37	0.00	0.00	0.00
5,134.28	10.57	211.83	5,065.00	-650.12	-403.51	-347.22	0.00	0.00	0.00
Shannon									
5,200.00	10.57	211.83	5,129.60	-660.36	-409.87	-352.69	0.00	0.00	0.00
5,300.00	10.57	211.83	5,227.90	-675.95	-419.54	-361.02	0.00	0.00	0.00
5,400.00	10.57	211.83	5,326.21	-691.53	-429.22	-369.34	0.00	0.00	0.00
5,500.00	10.57	211.83	5,424.51	-707.12	-438.89	-377.67	0.00	0.00	0.00
5,600.00	10.57	211.83	5,522.81	-722.71	-448.57	-385.99	0.00	0.00	0.00
5,700.00	10.57	211.83	5,621.11	-738.30	-458.24	-394.32	0.00	0.00	0.00
5,800.00	10.57	211.83	5,719.42	-753.88	-467.92	-402.64	0.00	0.00	0.00
5,900.00	10.57	211.83	5,817.72	-769.47	-477.59	-410.97	0.00	0.00	0.00
6,000.00	10.57	211.83	5,916.02	-785.06	-487.27	-419.30	0.00	0.00	0.00
6,011.99	10.57	211.83	5,927.81	-786.93	-488.43	-420.29	0.00	0.00	0.00
Begin Drop									
6,100.00	8.81	211.83	6,014.56	-799.52	-496.24	-427.02	2.00	-2.00	0.00
6,200.00	6.81	211.83	6,113.63	-811.06	-503.41	-433.18	2.00	-2.00	0.00
6,300.00	4.81	211.83	6,213.11	-819.66	-508.75	-437.78	2.00	-2.00	0.00
6,400.00	2.81	211.83	6,312.88	-825.31	-512.25	-440.79	2.00	-2.00	0.00
6,500.00	0.81	211.83	6,412.83	-828.00	-513.92	-442.23	2.00	-2.00	0.00
6,540.55	0.00	0.00	6,453.38	-828.24	-514.07	-442.36	2.00	-2.00	0.00
Vertical Point									
6,600.00	0.00	0.00	6,512.83	-828.24	-514.07	-442.36	0.00	0.00	0.00
6,640.55	0.00	0.00	6,553.38	-828.24	-514.07	-442.36	0.00	0.00	0.00
KOP, Build 9°/100' DLS									
6,700.00	5.35	90.00	6,612.74	-828.24	-511.30	-439.59	9.00	9.00	0.00
6,800.00	14.35	90.00	6,711.16	-828.24	-494.21	-422.57	9.00	9.00	0.00
6,900.00	23.35	90.00	6,805.70	-828.24	-461.93	-390.40	9.00	9.00	0.00
7,000.00	32.35	90.00	6,894.03	-828.24	-415.26	-343.90	9.00	9.00	0.00
7,100.00	41.35	90.00	6,973.97	-828.24	-355.35	-284.21	9.00	9.00	0.00
7,200.00	50.35	90.00	7,043.55	-828.24	-283.67	-212.78	9.00	9.00	0.00
7,300.00	59.35	90.00	7,101.06	-828.24	-201.99	-131.39	9.00	9.00	0.00
7,400.00	68.35	90.00	7,145.09	-828.24	-112.32	-42.04	9.00	9.00	0.00
7,500.00	77.35	90.00	7,174.55	-828.24	-16.87	53.07	9.00	9.00	0.00
7,600.00	86.35	90.00	7,188.71	-828.24	82.02	151.61	9.00	9.00	0.00
7,640.55	90.00	90.00	7,190.00	-828.24	122.55	191.99	9.00	9.00	0.00
LP, Hold to TD - Niobrara - 7" Csg									
7,700.00	90.00	90.00	7,190.00	-828.24	182.00	251.23	0.00	0.00	0.00
7,800.00	90.00	90.00	7,190.00	-828.24	282.00	350.87	0.00	0.00	0.00
7,900.00	90.00	90.00	7,190.00	-828.24	382.00	450.51	0.00	0.00	0.00
8,000.00	90.00	90.00	7,190.00	-828.24	482.00	550.16	0.00	0.00	0.00
8,100.00	90.00	90.00	7,190.00	-828.24	582.00	649.80	0.00	0.00	0.00
8,200.00	90.00	90.00	7,190.00	-828.24	682.00	749.44	0.00	0.00	0.00
8,300.00	90.00	90.00	7,190.00	-828.24	782.00	849.09	0.00	0.00	0.00
8,400.00	90.00	90.00	7,190.00	-828.24	882.00	948.73	0.00	0.00	0.00
8,500.00	90.00	90.00	7,190.00	-828.24	982.00	1,048.37	0.00	0.00	0.00
8,600.00	90.00	90.00	7,190.00	-828.24	1,082.00	1,148.02	0.00	0.00	0.00
8,700.00	90.00	90.00	7,190.00	-828.24	1,182.00	1,247.66	0.00	0.00	0.00
8,800.00	90.00	90.00	7,190.00	-828.24	1,282.00	1,347.30	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	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)
8,900.00	90.00	90.00	7,190.00	-828.24	1,382.00	1,446.95	0.00	0.00	0.00
9,000.00	90.00	90.00	7,190.00	-828.24	1,482.00	1,546.59	0.00	0.00	0.00
9,100.00	90.00	90.00	7,190.00	-828.24	1,582.00	1,646.23	0.00	0.00	0.00
9,200.00	90.00	90.00	7,190.00	-828.24	1,682.00	1,745.88	0.00	0.00	0.00
9,300.00	90.00	90.00	7,190.00	-828.23	1,782.00	1,845.52	0.00	0.00	0.00
9,400.00	90.00	90.00	7,190.00	-828.23	1,882.00	1,945.16	0.00	0.00	0.00
9,500.00	90.00	90.00	7,190.00	-828.23	1,982.00	2,044.81	0.00	0.00	0.00
9,600.00	90.00	90.00	7,190.00	-828.23	2,082.00	2,144.45	0.00	0.00	0.00
9,700.00	90.00	90.00	7,190.00	-828.23	2,182.00	2,244.09	0.00	0.00	0.00
9,800.00	90.00	90.00	7,190.00	-828.23	2,282.00	2,343.74	0.00	0.00	0.00
9,900.00	90.00	90.00	7,190.00	-828.23	2,382.00	2,443.38	0.00	0.00	0.00
10,000.00	90.00	90.00	7,190.00	-828.23	2,482.00	2,543.02	0.00	0.00	0.00
10,100.00	90.00	90.00	7,190.00	-828.23	2,582.00	2,642.67	0.00	0.00	0.00
10,200.00	90.00	90.00	7,190.00	-828.23	2,682.00	2,742.31	0.00	0.00	0.00
10,300.00	90.00	90.00	7,190.00	-828.23	2,782.00	2,841.95	0.00	0.00	0.00
10,400.00	90.00	90.00	7,190.00	-828.23	2,882.00	2,941.60	0.00	0.00	0.00
10,500.00	90.00	90.00	7,190.00	-828.23	2,982.00	3,041.24	0.00	0.00	0.00
10,600.00	90.00	90.00	7,190.00	-828.22	3,082.00	3,140.88	0.00	0.00	0.00
10,700.00	90.00	90.00	7,190.00	-828.22	3,182.00	3,240.53	0.00	0.00	0.00
10,800.00	90.00	90.00	7,190.00	-828.22	3,282.00	3,340.17	0.00	0.00	0.00
10,900.00	90.00	90.00	7,190.00	-828.22	3,382.00	3,439.81	0.00	0.00	0.00
11,000.00	90.00	90.00	7,190.00	-828.22	3,482.00	3,539.46	0.00	0.00	0.00
11,100.00	90.00	90.00	7,190.00	-828.22	3,582.00	3,639.10	0.00	0.00	0.00
11,200.00	90.00	90.00	7,190.00	-828.22	3,682.00	3,738.74	0.00	0.00	0.00
11,300.00	90.00	90.00	7,190.00	-828.22	3,782.00	3,838.39	0.00	0.00	0.00
11,400.00	90.00	90.00	7,190.00	-828.21	3,882.00	3,938.03	0.00	0.00	0.00
11,500.00	90.00	90.00	7,190.00	-828.21	3,982.00	4,037.67	0.00	0.00	0.00
11,600.00	90.00	90.00	7,190.00	-828.21	4,082.00	4,137.32	0.00	0.00	0.00
11,700.00	90.00	90.00	7,190.00	-828.21	4,182.00	4,236.96	0.00	0.00	0.00
11,800.00	90.00	90.00	7,190.00	-828.21	4,282.00	4,336.60	0.00	0.00	0.00
11,900.00	90.00	90.00	7,190.00	-828.21	4,382.00	4,436.25	0.00	0.00	0.00
12,000.00	90.00	90.00	7,190.00	-828.21	4,482.00	4,535.89	0.00	0.00	0.00
12,100.00	90.00	90.00	7,190.00	-828.20	4,582.00	4,635.53	0.00	0.00	0.00
12,200.00	90.00	90.00	7,190.00	-828.20	4,682.00	4,735.18	0.00	0.00	0.00
12,300.00	90.00	90.00	7,190.00	-828.20	4,782.00	4,834.82	0.00	0.00	0.00
12,400.00	90.00	90.00	7,190.00	-828.20	4,882.00	4,934.46	0.00	0.00	0.00
12,500.00	90.00	90.00	7,190.00	-828.20	4,982.00	5,034.11	0.00	0.00	0.00
12,600.00	90.00	90.00	7,190.00	-828.20	5,082.00	5,133.75	0.00	0.00	0.00
12,700.00	90.00	90.00	7,190.00	-828.19	5,182.00	5,233.39	0.00	0.00	0.00
12,800.00	90.00	90.00	7,190.00	-828.19	5,282.00	5,333.04	0.00	0.00	0.00
12,900.00	90.00	90.00	7,190.00	-828.19	5,382.00	5,432.68	0.00	0.00	0.00
13,000.00	90.00	90.00	7,190.00	-828.19	5,482.00	5,532.32	0.00	0.00	0.00
13,100.00	90.00	90.00	7,190.00	-828.19	5,582.00	5,631.97	0.00	0.00	0.00
13,200.00	90.00	90.00	7,190.00	-828.18	5,682.00	5,731.61	0.00	0.00	0.00
13,300.00	90.00	90.00	7,190.00	-828.18	5,782.00	5,831.25	0.00	0.00	0.00
13,400.00	90.00	90.00	7,190.00	-828.18	5,882.00	5,930.90	0.00	0.00	0.00
13,500.00	90.00	90.00	7,190.00	-828.18	5,982.00	6,030.54	0.00	0.00	0.00
13,600.00	90.00	90.00	7,190.00	-828.18	6,082.00	6,130.18	0.00	0.00	0.00
13,700.00	90.00	90.00	7,190.00	-828.17	6,182.00	6,229.83	0.00	0.00	0.00
13,800.00	90.00	90.00	7,190.00	-828.17	6,282.00	6,329.47	0.00	0.00	0.00
13,900.00	90.00	90.00	7,190.00	-828.17	6,382.00	6,429.11	0.00	0.00	0.00
14,000.00	90.00	90.00	7,190.00	-828.17	6,482.00	6,528.76	0.00	0.00	0.00
14,100.00	90.00	90.00	7,190.00	-828.16	6,582.00	6,628.40	0.00	0.00	0.00
14,200.00	90.00	90.00	7,190.00	-828.16	6,682.00	6,728.04	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	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)	
14,300.00	90.00	90.00	7,190.00	-828.16	6,782.00	6,827.69	0.00	0.00	0.00	
14,400.00	90.00	90.00	7,190.00	-828.16	6,882.00	6,927.33	0.00	0.00	0.00	
14,500.00	90.00	90.00	7,190.00	-828.15	6,982.00	7,026.97	0.00	0.00	0.00	
14,600.00	90.00	90.00	7,190.00	-828.15	7,082.00	7,126.62	0.00	0.00	0.00	
14,700.00	90.00	90.00	7,190.00	-828.15	7,182.00	7,226.26	0.00	0.00	0.00	
14,800.00	90.00	90.00	7,190.00	-828.15	7,282.00	7,325.90	0.00	0.00	0.00	
14,900.00	90.00	90.00	7,190.00	-828.14	7,382.00	7,425.55	0.00	0.00	0.00	
15,000.00	90.00	90.00	7,190.00	-828.14	7,482.00	7,525.19	0.00	0.00	0.00	
15,100.00	90.00	90.00	7,190.00	-828.14	7,582.00	7,624.83	0.00	0.00	0.00	
15,200.00	90.00	90.00	7,190.00	-828.14	7,682.00	7,724.47	0.00	0.00	0.00	
15,300.00	90.00	90.00	7,190.00	-828.13	7,782.00	7,824.12	0.00	0.00	0.00	
15,400.00	90.00	90.00	7,190.00	-828.13	7,882.00	7,923.76	0.00	0.00	0.00	
15,500.00	90.00	90.00	7,190.00	-828.13	7,982.00	8,023.40	0.00	0.00	0.00	
15,600.00	90.00	90.00	7,190.00	-828.12	8,082.00	8,123.05	0.00	0.00	0.00	
15,700.00	90.00	90.00	7,190.00	-828.12	8,182.00	8,222.69	0.00	0.00	0.00	
15,800.00	90.00	90.00	7,190.00	-828.12	8,282.00	8,322.33	0.00	0.00	0.00	
15,900.00	90.00	90.00	7,190.00	-828.12	8,382.00	8,421.98	0.00	0.00	0.00	
16,000.00	90.00	90.00	7,190.00	-828.11	8,482.00	8,521.62	0.00	0.00	0.00	
16,100.00	90.00	90.00	7,190.00	-828.11	8,582.00	8,621.26	0.00	0.00	0.00	
16,200.00	90.00	90.00	7,190.00	-828.11	8,682.00	8,720.91	0.00	0.00	0.00	
16,300.00	90.00	90.00	7,190.00	-828.10	8,782.00	8,820.55	0.00	0.00	0.00	
16,400.00	90.00	90.00	7,190.00	-828.10	8,882.00	8,920.19	0.00	0.00	0.00	
16,500.00	90.00	90.00	7,190.00	-828.10	8,982.00	9,019.84	0.00	0.00	0.00	
16,600.00	90.00	90.00	7,190.00	-828.09	9,082.00	9,119.48	0.00	0.00	0.00	
16,700.00	90.00	90.00	7,190.00	-828.09	9,182.00	9,219.12	0.00	0.00	0.00	
16,800.00	90.00	90.00	7,190.00	-828.09	9,282.00	9,318.77	0.00	0.00	0.00	
16,900.00	90.00	90.00	7,190.00	-828.08	9,382.00	9,418.41	0.00	0.00	0.00	
17,000.00	90.00	90.00	7,190.00	-828.08	9,482.00	9,518.05	0.00	0.00	0.00	
17,100.00	90.00	90.00	7,190.00	-828.08	9,582.00	9,617.70	0.00	0.00	0.00	
17,200.00	90.00	90.00	7,190.00	-828.07	9,682.00	9,717.34	0.00	0.00	0.00	
17,297.69	90.00	90.00	7,190.00	-828.07	9,779.68	9,814.68	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	
- hit/miss target										
- Shape										
KOP 11	0.00	0.00	6,453.38	-828.24	-514.07	1,456,022.74	3,191,027.23	40° 34' 59.331 N	104° 48' 44.085 W	
- plan hits target center										
- Point										
LP 11	0.00	0.00	7,190.00	-828.24	122.55	1,456,022.74	3,191,663.85	40° 34' 59.282 N	104° 48' 35.834 W	
- plan hits target center										
- Point										
PBHL Thornton 11	0.00	0.00	7,190.00	-828.07	9,779.68	1,456,022.91	3,201,320.99	40° 34' 58.523 N	104° 46' 30.673 W	
- plan hits target center										
- Point										



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Thornton 11
Company:	Extraction Oil & Gas	TVD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Project:	Weld Co., Co	MD Reference:	KB @ 5054.00usft (Xtreme 7 - 16')
Site:	Sec.08-T07N-R66W	North Reference:	Grid
Well:	Thornton 11	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Rev 0		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
7,640.55	7,190.00	7" Csg	7	7-1/2	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,959.34	3,910.00	Parkman		0.00	
4,705.00	4,643.00	Sussex		0.00	
5,134.28	5,065.00	Shannon		0.00	
7,640.55	7,190.00	Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
700.00	700.00	0.00	0.00	Begin Nudge	
1,228.56	1,225.57	-41.31	-25.64	Hold Tangent	
6,011.99	5,927.81	-786.93	-488.43	Begin Drop	
6,540.55	6,453.38	-828.24	-514.07	Vertical Point	
6,640.55	6,553.38	-828.24	-514.07	KOP, Build 9°/100' DLS	
7,640.55	7,190.00	-828.24	122.55	LP, Hold to TD	
17,297.69	7,190.00	-828.07	9,779.68	PBHL/TD	