

Extraction Oil & Gas

Well Name: **Thornton 12**

Surface Location: Thornton 8-P Pad Sec.8-T7N-R66W

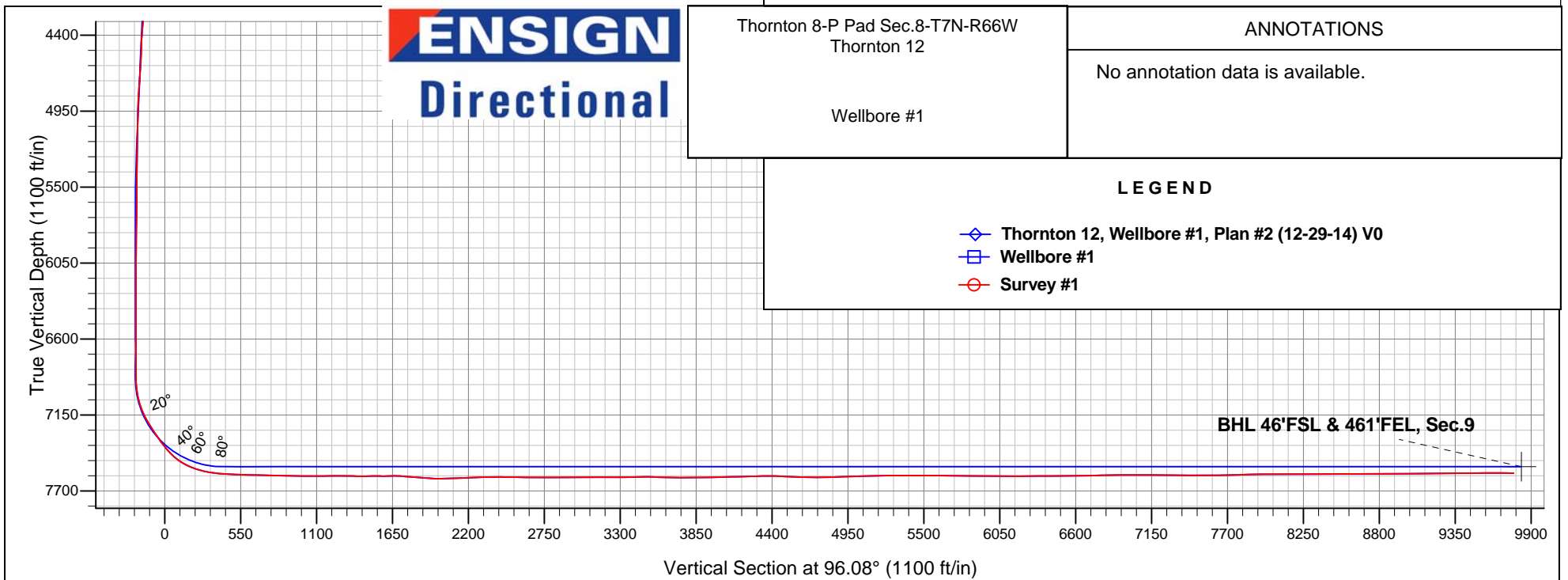
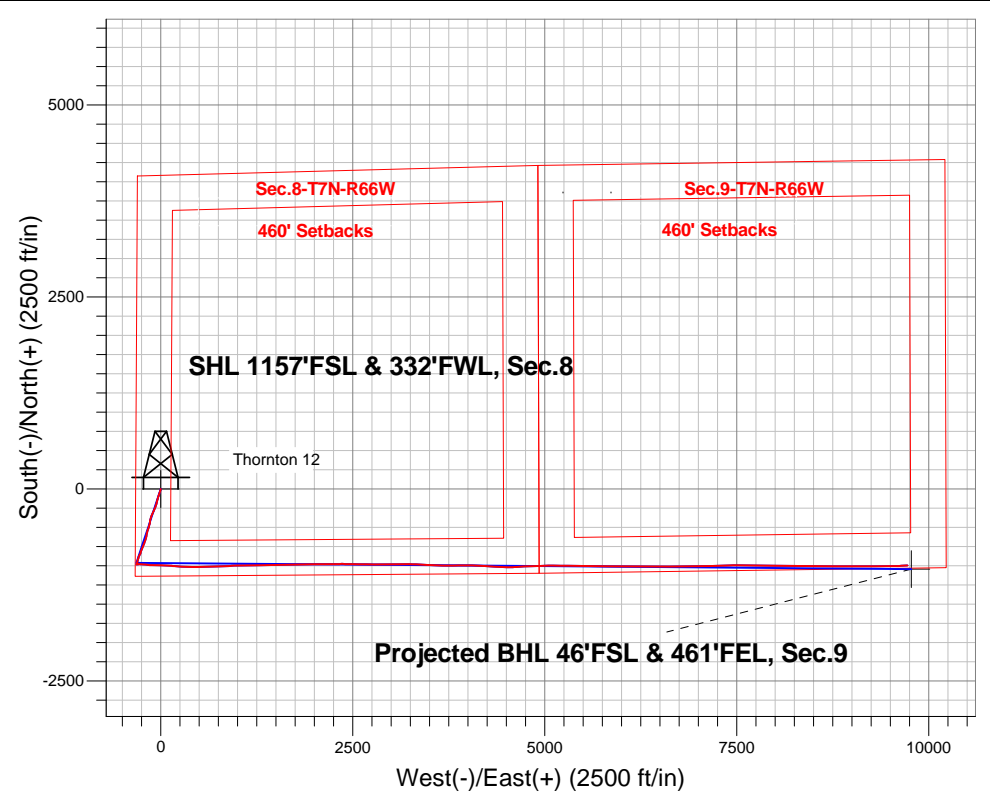
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 5039.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1456822.92	3191541.24	40.585333	-104.810373	
RKB - 24' WELL @ 5063.0ft (RKB - 24')						

FINAL SURVEY

Projected Bottom Hole Location
17431'MD 7571'TVD 995'S & 9773'E of SHL
89.34 degree Incl @ 87.0 degree AZM



ENSIGN
Directional

Thornton 8-P Pad Sec.8-T7N-R66W
Thornton 12

Wellbore #1

ANNOTATIONS

No annotation data is available.

LEGEND

- Thornton 12, Wellbore #1, Plan #2 (12-29-14) V0
- Wellbore #1
- Survey #1



Extraction Oil & Gas

SEC.8-T7N-T66W

Thornton 8-P Pad Sec.8-T7N-R66W

Thornton 12

Wellbore #1

Survey: Survey #1

Standard Survey Report

12 January, 2015



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 12
Project:	SEC.8-T7N-T66W	TVD Reference:	WELL @ 5063.0ft (RKB - 24')
Site:	Thornton 8-P Pad Sec.8-T7N-R66W	MD Reference:	WELL @ 5063.0ft (RKB - 24')
Well:	Thornton 12	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.8-T7N-T66W, Weld County, CO		
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	Thornton 8-P Pad Sec.8-T7N-R66W		
Site Position:		Northing:	1,456,822.93ft
From:	Lat/Long	Easting:	3,191,541.24ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.585333
		Longitude:	-104.810373
		Grid Convergence:	0.45 °

Well	Thornton 12		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/29/2014	8.43	67.07	52,848

Design	Wellbore #1			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	96.08

Survey Program	Date	1/12/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
177.0	17,431.0	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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	63.30	1.0	0.0	0.0	0.0	0.40	0.40	0.00	
SHL 1157'FSL & 332'FWL, Sec.8										
177.0	0.70	63.30	177.0	0.5	1.0	0.9	0.40	0.40	0.00	
269.0	1.20	178.60	269.0	-0.2	1.5	1.5	1.77	0.54	125.33	
362.0	3.20	198.40	361.9	-3.7	0.7	1.1	2.27	2.15	21.29	
454.0	5.30	201.60	453.7	-10.0	-1.7	-0.6	2.30	2.28	3.48	
546.0	7.50	197.60	545.1	-19.7	-5.1	-2.9	2.44	2.39	-4.35	
639.0	8.90	196.00	637.1	-32.4	-8.9	-5.4	1.53	1.51	-1.72	
731.0	11.30	198.40	727.7	-47.8	-13.7	-8.5	2.65	2.61	2.61	
792.0	12.40	200.60	787.4	-59.6	-17.9	-11.5	1.95	1.80	3.61	
915.0	14.30	196.90	907.1	-86.5	-26.9	-17.6	1.69	1.54	-3.01	
1,007.0	14.50	197.40	996.2	-108.4	-33.7	-22.0	0.26	0.22	0.54	

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Well:	Thornton 12	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,099.0	13.10	196.90	1,085.5	-129.4	-40.2	-26.2	1.53	-1.52	-0.54
1,192.0	11.20	193.40	1,176.4	-148.2	-45.3	-29.4	2.19	-2.04	-3.76
1,284.0	11.50	192.30	1,266.6	-165.9	-49.3	-31.5	0.40	0.33	-1.20
1,376.0	10.30	193.20	1,357.0	-182.8	-53.2	-33.5	1.32	-1.30	0.98
1,468.0	9.10	194.40	1,447.7	-197.9	-56.9	-35.6	1.32	-1.30	1.30
1,561.0	8.90	203.00	1,539.5	-211.6	-61.5	-38.7	1.46	-0.22	9.25
1,653.0	8.70	202.80	1,630.4	-224.6	-67.0	-42.8	0.22	-0.22	-0.22
1,745.0	8.70	199.50	1,721.4	-237.6	-72.0	-46.4	0.54	0.00	-3.59
1,837.0	8.50	197.60	1,812.3	-250.6	-76.4	-49.4	0.38	-0.22	-2.07
1,930.0	9.60	204.40	1,904.2	-264.2	-81.7	-53.2	1.65	1.18	7.31
2,026.0	10.70	203.70	1,998.7	-279.7	-88.5	-58.4	1.15	1.15	-0.73
2,120.0	12.50	202.70	2,090.8	-297.1	-96.0	-64.0	1.93	1.91	-1.06
2,217.0	11.70	204.40	2,185.6	-315.7	-104.1	-70.1	0.90	-0.82	1.75
2,312.0	13.30	206.50	2,278.3	-334.3	-113.0	-76.9	1.75	1.68	2.21
2,408.0	11.90	200.00	2,372.0	-353.4	-121.3	-83.1	2.07	-1.46	-6.77
2,504.0	12.70	202.70	2,465.8	-372.5	-128.7	-88.5	1.03	0.83	2.81
2,600.0	11.40	193.20	2,559.7	-391.5	-135.0	-92.7	2.47	-1.35	-9.90
2,696.0	11.60	187.20	2,653.8	-410.3	-138.3	-94.1	1.26	0.21	-6.25
2,791.0	12.60	182.80	2,746.7	-430.1	-140.0	-93.7	1.43	1.05	-4.63
2,887.0	11.60	193.40	2,840.6	-449.9	-142.8	-94.3	2.53	-1.04	11.04
2,983.0	12.70	197.20	2,934.4	-469.4	-148.1	-97.6	1.42	1.15	3.96
3,079.0	14.50	194.40	3,027.7	-491.1	-154.3	-101.4	2.00	1.88	-2.92
3,175.0	14.20	198.60	3,120.7	-513.9	-161.0	-105.7	1.13	-0.31	4.38
3,270.0	13.30	200.60	3,213.0	-535.2	-168.6	-110.9	1.07	-0.95	2.11
3,366.0	13.10	193.90	3,306.5	-556.1	-175.1	-115.2	1.61	-0.21	-6.98
3,462.0	13.40	191.80	3,399.9	-577.6	-180.0	-117.8	0.59	0.31	-2.19
3,557.0	12.20	186.80	3,492.6	-598.3	-183.4	-119.0	1.72	-1.26	-5.26
3,653.0	11.10	194.90	3,586.6	-617.3	-187.0	-120.5	2.05	-1.15	8.44
3,749.0	11.10	200.90	3,680.8	-634.9	-192.6	-124.3	1.20	0.00	6.25
3,845.0	10.00	191.80	3,775.2	-651.7	-197.6	-127.5	2.08	-1.15	-9.48
3,941.0	10.90	193.90	3,869.6	-668.6	-201.5	-129.6	1.02	0.94	2.19
4,036.0	12.00	204.10	3,962.7	-686.4	-207.7	-133.9	2.42	1.16	10.74
4,131.0	14.70	197.20	4,055.1	-706.9	-215.3	-139.2	3.30	2.84	-7.26
4,227.0	15.70	203.00	4,147.8	-730.5	-224.0	-145.4	1.89	1.04	6.04
4,323.0	16.40	202.30	4,240.0	-755.0	-234.2	-152.9	0.76	0.73	-0.73
4,418.0	16.00	202.50	4,331.3	-779.5	-244.3	-160.4	0.43	-0.42	0.21
4,514.0	12.70	200.70	4,424.3	-801.6	-253.1	-166.8	3.47	-3.44	-1.88
4,610.0	11.30	196.20	4,518.2	-820.5	-259.5	-171.1	1.75	-1.46	-4.69
4,706.0	11.50	200.20	4,612.3	-838.5	-265.4	-175.1	0.85	0.21	4.17
4,801.0	11.30	210.40	4,705.4	-855.4	-273.4	-181.2	2.13	-0.21	10.74
4,897.0	11.10	202.00	4,799.6	-872.1	-281.6	-187.6	1.71	-0.21	-8.75
4,993.0	11.00	201.30	4,893.8	-889.2	-288.4	-192.6	0.17	-0.10	-0.73
5,089.0	8.40	190.50	4,988.4	-904.7	-293.0	-195.5	3.29	-2.71	-11.25
5,185.0	7.50	195.30	5,083.5	-917.6	-295.9	-197.1	1.16	-0.94	5.00
5,280.0	6.60	195.60	5,177.8	-928.8	-299.0	-199.0	0.95	-0.95	0.32
5,376.0	5.80	194.10	5,273.2	-938.8	-301.7	-200.6	0.85	-0.83	-1.56
5,471.0	6.50	193.20	5,367.7	-948.7	-304.1	-201.9	0.74	0.74	-0.95
5,567.0	4.70	189.80	5,463.2	-957.9	-306.0	-202.8	1.91	-1.88	-3.54
5,663.0	3.90	188.30	5,558.9	-965.0	-307.1	-203.2	0.84	-0.83	-1.56
5,759.0	3.20	192.10	5,654.8	-970.9	-308.2	-203.6	0.77	-0.73	3.96
5,855.0	2.40	193.00	5,750.6	-975.4	-309.2	-204.1	0.83	-0.83	0.94
5,942.0	2.50	231.50	5,837.6	-978.4	-311.1	-205.7	1.86	0.11	44.25
6,038.0	2.50	221.10	5,933.5	-981.3	-314.1	-208.4	0.47	0.00	-10.83
6,134.0	0.80	70.50	6,029.5	-982.6	-314.8	-209.0	3.36	-1.77	-156.88

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Well:	Thornton 12	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,230.0	0.30	53.60	6,125.4	-982.3	-314.0	-208.2	0.54	-0.52	-17.60
6,326.0	0.20	197.00	6,221.4	-982.3	-313.9	-208.0	0.50	-0.10	149.38
6,421.0	0.50	21.40	6,316.4	-982.0	-313.8	-208.0	0.74	0.32	-184.84
6,516.0	0.30	274.60	6,411.4	-981.6	-313.8	-208.1	0.69	-0.21	-112.42
6,611.0	0.90	313.60	6,506.4	-981.1	-314.6	-208.9	0.73	0.63	41.05
6,707.0	0.90	325.90	6,602.4	-980.0	-315.6	-210.0	0.20	0.00	12.81
6,803.0	1.00	354.90	6,698.4	-978.5	-316.1	-210.7	0.51	0.10	30.21
6,898.0	1.00	67.70	6,793.4	-977.4	-315.4	-210.1	1.25	0.00	76.63
6,995.0	1.20	98.30	6,890.4	-977.2	-313.6	-208.4	0.63	0.21	31.55
7,090.0	8.40	94.20	6,985.0	-977.8	-305.7	-200.4	7.58	7.58	-4.32
7,186.0	18.10	88.20	7,078.3	-977.9	-283.8	-178.6	10.19	10.10	-6.25
7,281.0	27.90	94.00	7,165.7	-979.0	-246.7	-141.7	10.58	10.32	6.11
7,377.0	33.20	97.60	7,248.3	-984.0	-198.2	-92.9	5.84	5.52	3.75
7,473.0	35.20	92.50	7,327.7	-988.7	-144.5	-39.0	3.64	2.08	-5.31
7,569.0	40.60	91.20	7,403.5	-990.6	-85.6	19.8	5.69	5.63	-1.35
7,664.0	52.10	91.40	7,468.9	-992.1	-17.0	88.2	12.11	12.11	0.21
7,760.0	66.00	93.00	7,518.2	-995.4	65.1	170.1	14.55	14.48	1.67
7,856.0	74.90	94.40	7,550.3	-1,001.2	155.2	260.4	9.37	9.27	1.46
7,953.0	82.30	93.30	7,569.4	-1,007.6	250.0	355.4	7.71	7.63	-1.13
7,985.0	85.10	93.70	7,573.0	-1,009.5	281.8	387.1	8.84	8.75	1.25
8,030.0	86.35	92.81	7,576.3	-1,012.1	326.6	432.0	3.41	2.78	-1.98
8,125.0	87.76	90.87	7,581.2	-1,015.1	421.4	526.6	2.52	1.48	-2.04
8,219.0	89.08	89.03	7,583.8	-1,015.1	515.4	620.0	2.41	1.40	-1.96
8,313.0	87.67	86.65	7,586.4	-1,011.5	609.3	713.0	2.94	-1.50	-2.53
8,408.0	89.34	88.32	7,588.9	-1,007.3	704.1	806.9	2.49	1.76	1.76
8,502.0	90.13	88.50	7,589.4	-1,004.7	798.1	900.0	0.86	0.84	0.19
8,596.0	87.93	86.39	7,591.0	-1,000.6	892.0	992.9	3.24	-2.34	-2.24
8,690.0	89.52	88.67	7,593.0	-996.5	985.8	1,085.8	2.96	1.69	2.43
8,784.0	91.98	89.20	7,591.8	-994.8	1,079.8	1,179.1	2.68	2.62	0.56
8,878.0	89.43	88.50	7,590.7	-992.9	1,173.8	1,272.3	2.81	-2.71	-0.74
8,972.0	88.64	88.67	7,592.2	-990.5	1,267.7	1,365.5	0.86	-0.84	0.18
9,066.0	91.01	89.47	7,592.5	-989.0	1,361.7	1,458.8	2.66	2.52	0.85
9,160.0	89.34	89.47	7,592.2	-988.2	1,455.7	1,552.2	1.78	-1.78	0.00
9,255.0	91.80	89.64	7,591.3	-987.4	1,550.7	1,646.6	2.60	2.59	0.18
9,350.0	84.59	88.76	7,594.3	-986.1	1,645.6	1,740.8	7.65	-7.59	-0.93
9,444.0	85.82	88.06	7,602.1	-983.5	1,739.2	1,833.6	1.50	1.31	-0.74
9,538.0	86.70	89.90	7,608.3	-981.8	1,833.0	1,926.7	2.17	0.94	1.96
9,633.0	90.92	89.03	7,610.2	-980.9	1,927.9	2,021.0	4.54	4.44	-0.92
9,727.0	92.24	87.88	7,607.7	-978.4	2,021.9	2,114.1	1.86	1.40	-1.22
9,820.0	93.03	89.29	7,603.4	-976.1	2,114.7	2,206.2	1.74	0.85	1.52
9,915.0	91.89	91.31	7,599.3	-976.6	2,209.6	2,300.7	2.44	-1.20	2.13
10,009.0	88.81	88.32	7,598.7	-976.3	2,303.6	2,394.1	4.57	-3.28	-3.18
10,103.0	90.48	90.87	7,599.3	-975.6	2,397.6	2,487.5	3.24	1.78	2.71
10,197.0	87.93	91.40	7,600.6	-977.5	2,491.6	2,581.1	2.77	-2.71	0.56
10,291.0	90.22	90.61	7,602.1	-979.1	2,585.5	2,674.7	2.58	2.44	-0.84
10,386.0	89.96	90.87	7,602.0	-980.4	2,680.5	2,769.3	0.39	-0.27	0.27
10,479.0	90.31	90.70	7,601.8	-981.6	2,773.5	2,861.9	0.42	0.38	-0.18
10,571.0	90.31	89.64	7,601.3	-981.9	2,865.5	2,953.4	1.15	0.00	-1.15
10,664.0	89.87	88.59	7,601.1	-980.5	2,958.5	3,045.7	1.22	-0.47	-1.13
10,756.0	91.45	89.11	7,600.1	-978.6	3,050.5	3,137.0	1.81	1.72	0.57
10,848.0	88.37	88.67	7,600.2	-976.9	3,142.4	3,228.2	3.38	-3.35	-0.48
10,940.0	91.28	91.31	7,600.5	-976.8	3,234.4	3,319.7	4.27	3.16	2.87
11,032.0	91.10	92.45	7,598.6	-979.9	3,326.4	3,411.4	1.25	-0.20	1.24
11,125.0	90.31	92.98	7,597.4	-984.3	3,419.2	3,504.3	1.02	-0.85	0.57

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Design:	Wellbore #1	Database:	Landmark

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11,217.0	87.85	93.68	7,598.9	-989.6	3,511.1	3,596.1	2.78	-2.67	0.76
11,309.0	88.72	92.28	7,601.7	-994.4	3,602.9	3,688.0	1.79	0.95	-1.52
11,401.0	88.72	90.52	7,603.7	-996.6	3,694.8	3,779.6	1.91	0.00	-1.91
11,494.0	91.98	88.32	7,603.1	-995.7	3,787.8	3,872.0	4.23	3.51	-2.37
11,586.0	92.42	88.94	7,599.6	-993.5	3,879.7	3,963.1	0.83	0.48	0.67
11,678.0	89.69	90.87	7,597.9	-993.3	3,971.7	4,054.6	3.63	-2.97	2.10
11,770.0	91.80	91.57	7,596.7	-995.3	4,063.7	4,146.2	2.42	2.29	0.76
11,863.0	91.98	93.33	7,593.7	-999.3	4,156.5	4,239.0	1.90	0.19	1.89
11,955.0	90.40	93.60	7,591.7	-1,004.8	4,248.3	4,330.9	1.74	-1.72	0.29
12,047.0	89.34	93.07	7,592.0	-1,010.2	4,340.2	4,422.8	1.29	-1.15	-0.58
12,140.0	87.49	92.28	7,594.5	-1,014.5	4,433.0	4,515.6	2.16	-1.99	-0.85
12,236.0	87.05	90.52	7,599.1	-1,016.9	4,528.9	4,611.1	1.89	-0.46	-1.83
12,331.0	90.04	86.56	7,601.5	-1,014.4	4,623.8	4,705.2	5.22	3.15	-4.17
12,436.0	92.15	85.95	7,599.5	-1,007.6	4,728.5	4,808.7	2.09	2.01	-0.58
12,531.0	91.01	89.38	7,596.9	-1,003.7	4,823.4	4,902.6	3.80	-1.20	3.61
12,627.0	91.89	87.36	7,594.5	-1,001.0	4,919.3	4,997.7	2.29	0.92	-2.10
12,723.0	91.98	88.67	7,591.2	-997.7	5,015.2	5,092.7	1.37	0.09	1.36
12,819.0	90.75	90.52	7,588.9	-997.0	5,111.2	5,188.0	2.31	-1.28	1.93
12,915.0	91.01	91.31	7,587.5	-998.5	5,207.2	5,283.6	0.87	0.27	0.82
13,010.0	89.96	89.82	7,586.7	-999.5	5,302.2	5,378.2	1.92	-1.11	-1.57
13,106.0	88.99	90.17	7,587.5	-999.5	5,398.1	5,473.6	1.07	-1.01	0.36
13,202.0	89.25	90.87	7,589.0	-1,000.3	5,494.1	5,569.2	0.78	0.27	0.73
13,298.0	89.96	91.40	7,589.7	-1,002.2	5,590.1	5,664.8	0.92	0.74	0.55
13,394.0	89.60	91.57	7,590.0	-1,004.7	5,686.1	5,760.5	0.41	-0.38	0.18
13,489.0	89.78	89.99	7,590.5	-1,006.0	5,781.1	5,855.1	1.67	0.19	-1.66
13,585.0	89.43	90.43	7,591.2	-1,006.4	5,877.1	5,950.6	0.59	-0.36	0.46
13,681.0	89.34	90.34	7,592.2	-1,007.0	5,973.1	6,046.1	0.13	-0.09	-0.09
13,776.0	90.04	89.55	7,592.8	-1,006.9	6,068.1	6,140.6	1.11	0.74	-0.83
13,872.0	90.40	90.52	7,592.4	-1,007.0	6,164.0	6,236.0	1.08	0.38	1.01
13,968.0	90.22	90.08	7,591.9	-1,007.5	6,260.0	6,331.5	0.50	-0.19	-0.46
14,064.0	90.22	90.17	7,591.5	-1,007.7	6,356.0	6,427.0	0.09	0.00	0.09
14,160.0	90.48	90.34	7,590.9	-1,008.1	6,452.0	6,522.5	0.32	0.27	0.18
14,255.0	90.66	90.87	7,590.0	-1,009.1	6,547.0	6,617.1	0.59	0.19	0.56
14,350.0	91.01	89.55	7,588.6	-1,009.5	6,642.0	6,711.6	1.44	0.37	-1.39
14,446.0	91.54	89.90	7,586.4	-1,009.0	6,738.0	6,807.0	0.66	0.55	0.36
14,542.0	90.31	88.94	7,584.9	-1,008.0	6,834.0	6,902.3	1.63	-1.28	-1.00
14,637.0	90.66	89.29	7,584.1	-1,006.6	6,929.0	6,996.6	0.52	0.37	0.37
14,733.0	89.60	89.11	7,583.9	-1,005.2	7,024.9	7,091.9	1.12	-1.10	-0.19
14,829.0	89.60	87.88	7,584.5	-1,002.7	7,120.9	7,187.1	1.28	0.00	-1.28
14,925.0	89.96	88.06	7,584.9	-999.3	7,216.8	7,282.1	0.42	0.38	0.19
15,021.0	89.60	88.23	7,585.3	-996.2	7,312.8	7,377.2	0.41	-0.38	0.18
15,116.0	89.52	88.32	7,586.0	-993.3	7,407.8	7,471.3	0.13	-0.08	0.09
15,212.0	89.52	89.47	7,586.8	-991.5	7,503.7	7,566.5	1.20	0.00	1.20
15,308.0	91.10	90.96	7,586.3	-991.8	7,599.7	7,662.0	2.26	1.65	1.55
15,404.0	91.89	90.34	7,583.8	-992.9	7,695.7	7,757.6	1.05	0.82	-0.65
15,499.0	91.98	90.70	7,580.6	-993.8	7,790.6	7,852.1	0.39	0.09	0.38
15,595.0	90.22	91.22	7,578.7	-995.4	7,886.6	7,947.7	1.91	-1.83	0.54
15,690.0	90.75	90.87	7,577.9	-997.1	7,981.6	8,042.3	0.67	0.56	-0.37
15,786.0	89.43	90.43	7,577.8	-998.2	8,077.6	8,137.9	1.45	-1.38	-0.46
15,882.0	89.96	90.96	7,578.3	-999.4	8,173.6	8,233.4	0.78	0.55	0.55
15,978.0	90.48	91.31	7,577.9	-1,001.3	8,269.5	8,329.1	0.65	0.54	0.36
16,074.0	90.13	90.78	7,577.4	-1,003.0	8,365.5	8,424.7	0.66	-0.36	-0.55
16,169.0	90.40	90.70	7,577.0	-1,004.3	8,460.5	8,519.3	0.30	0.28	-0.08
16,265.0	90.92	91.14	7,575.9	-1,005.8	8,556.5	8,614.9	0.71	0.54	0.46

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 12
Project:	SEC.8-T7N-T66W	TVD Reference:	WELL @ 5063.0ft (RKB - 24')
Site:	Thornton 8-P Pad Sec.8-T7N-R66W	MD Reference:	WELL @ 5063.0ft (RKB - 24')
Well:	Thornton 12	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,361.0	89.52	90.61	7,575.5	-1,007.3	8,652.5	8,710.5	1.56	-1.46	-0.55
16,456.0	89.87	89.29	7,576.0	-1,007.2	8,747.5	8,804.9	1.44	0.37	-1.39
16,552.0	90.22	89.20	7,575.9	-1,005.9	8,843.5	8,900.3	0.38	0.36	-0.09
16,648.0	91.10	88.68	7,574.8	-1,004.1	8,939.4	8,995.5	1.06	0.92	-0.54
16,744.0	90.31	89.11	7,573.6	-1,002.3	9,035.4	9,090.7	0.94	-0.82	0.45
16,839.0	91.19	90.08	7,572.4	-1,001.6	9,130.4	9,185.1	1.38	0.93	1.02
16,935.0	90.57	90.70	7,570.9	-1,002.3	9,226.4	9,280.6	0.91	-0.65	0.65
17,030.0	89.69	90.78	7,570.7	-1,003.5	9,321.4	9,375.2	0.93	-0.93	0.08
17,125.0	90.22	90.08	7,570.8	-1,004.2	9,416.4	9,469.8	0.92	0.56	-0.74
17,222.0	91.10	89.47	7,569.7	-1,003.8	9,513.4	9,566.2	1.10	0.91	-0.63
17,318.0	88.90	87.00	7,569.7	-1,000.9	9,609.3	9,661.3	3.45	-2.29	-2.57
17,350.0	89.34	87.00	7,570.2	-999.2	9,641.3	9,692.9	1.38	1.38	0.00
17,431.0	89.34	87.00	7,571.1	-995.0	9,722.1	9,772.8	0.00	0.00	0.00
BHL 0'FSL & 460'FEL, Sec.9									

Checked By: _____ Approved By: _____ Date: _____