

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

NE SE SEC. 8 T5N R66W 6th P.M.

TC-MOISER HILL 2-9-11

JOB #2017-145-341

10 June, 2017

Survey: FINAL SURVEYS

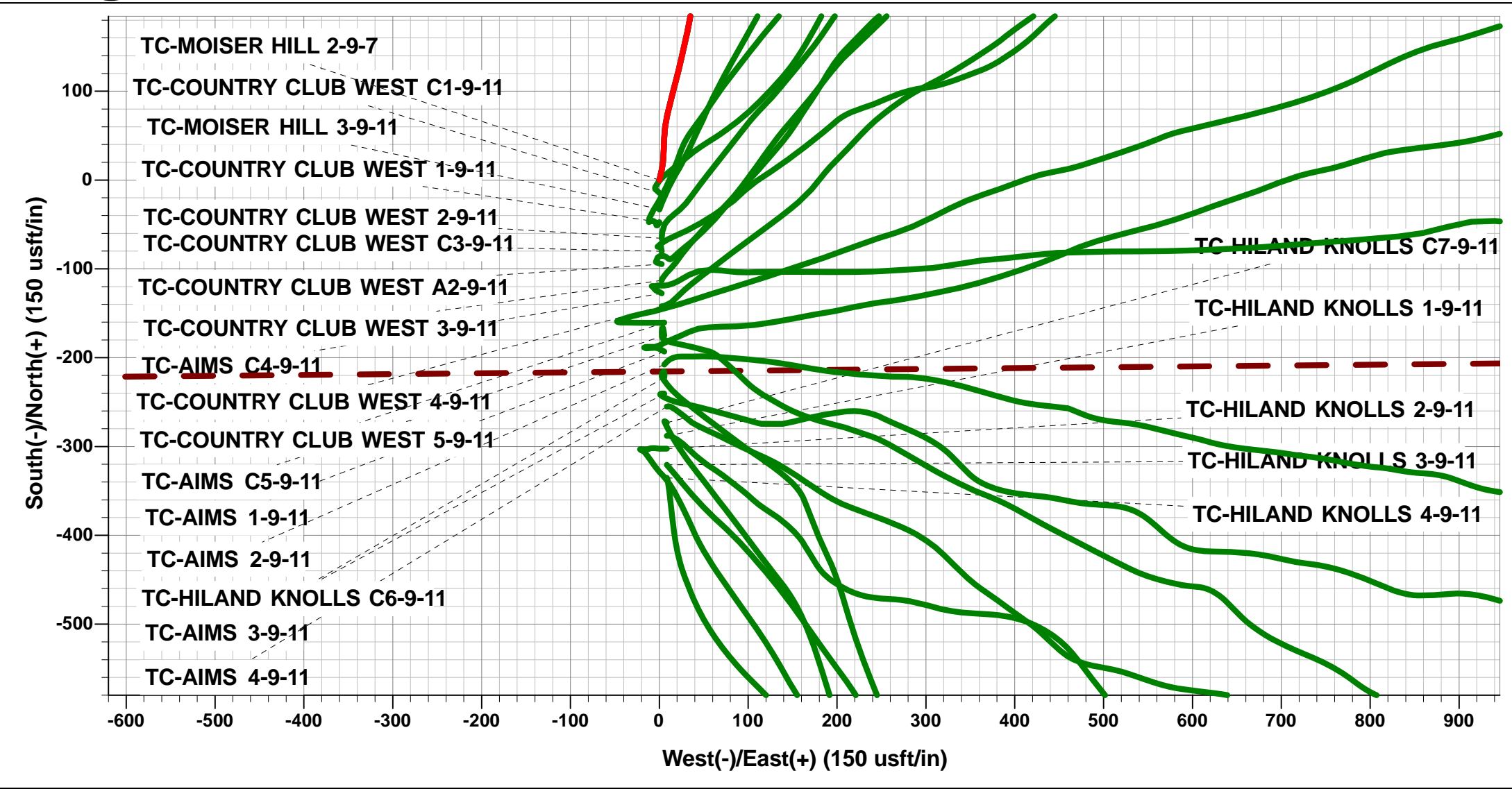




Project: WELD COUNTY, COLORADO (NAD 83)
Site: NE SE SEC. 8 T5N R66W 6th P.M.
Well: TC-MOISER HILL 2-9-11
Wellbore: JOB #2017-145-341
Design: FINAL SURVEYS

ANNOTATIONS										
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation		
449.8	450.0	2.73	12.99	9.9	2.3	3.9	11.2	START NUDGE		
1538.0	1560.0	16.68	8.69	199.9	37.6	70.2	203.8	SURFACE CASING		
6581.1	7106.0	20.16	30.45	2255.1	1036.7	1396.8	2499.0	KOP		
7052.2	7948.7	84.68	89.50	2435.7	1637.2	2019.0	3140.8	~460ft SETBACK X-OVER		
7075.4	8457.0	89.00	91.10	2430.2	2144.9	2518.7	3648.2	HZ LANDING POINT		
7026.8	20471.0	90.10	88.20	2369.7	14153.3	14350.3	15661.8	LAST SURVEY - JUNE 10, 2017		
7026.7	20526.0	90.10	88.20	2371.5	14208.2	14404.8	15716.8	EXTRAPOLATION TO TD		

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL - TC-MOISER HILL 2-9-11 (P3)	7080.0	2401.3	14258.6	40.421310	-104.747480
IP #1 - TC-MOISER HILL 2-9-11 (P3)	7080.0	2413.1	3861.6	40.421353	-104.784821
IP #2 - TC-MOISER HILL 2-9-11 (P3)	7080.0	2388.1	6519.8	40.421283	-104.775274
IP #3 - TC-MOISER HILL 2-9-11 (P3)	7080.0	2394.0	9138.9	40.421297	-104.765867
IP #4 - TC-MOISER HILL 2-9-11 (P3)	7080.0	2390.8	11782.5	40.421285	-104.756373
LANDING PNT - TC-MOISER HILL 2-9-11 (P3)	7080.0	2433.7	1637.2	40.421410	-104.792810



AS DRILLED LOCAL COORDINATES

SHL: 2430ft FNL & 1195ft FEL of Sec 8

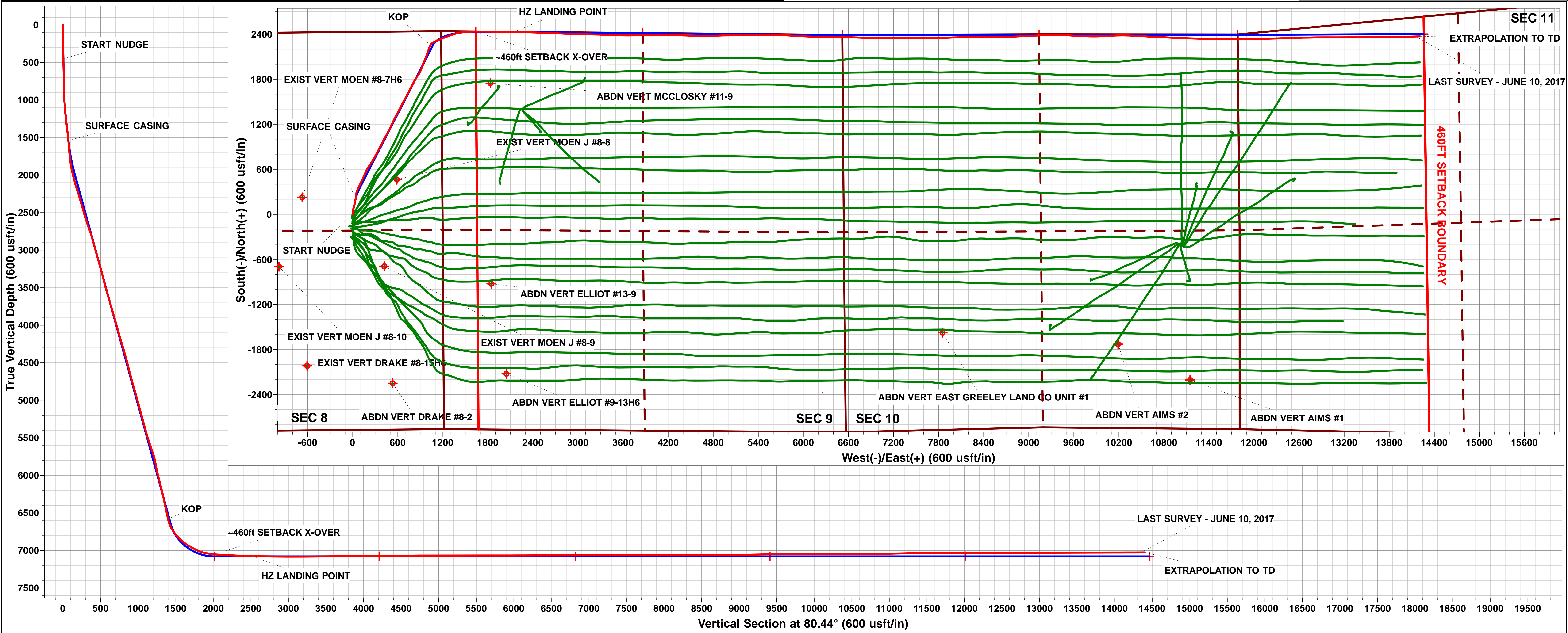
HZ LP: 3.5ft FNL & 967.7ft FWL of Sec 9

BHL: 252.8ft FNL & 2427.6ft FWL of Sec 11

Compass rose showing True North (T) and Magnetic North (M) with an arrow pointing to the right.

Azimuths to True North
Magnetic North: 8.28°

Magnetic Field
Strength: 52450.1snT
Dip Angle: 66.87°
Date: 28/12/2016
Model: IGRF2015



Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well TC-MOISER HILL 2-9-11
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	NE SE SEC. 8 T5N R66W 6th P.M.				
Site Position:		Northing:	1,394,363.62 usft	Latitude:	40.413810
From:	Lat/Long	Easting:	3,195,288.63 usft	Longitude:	-104.798660
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.45 °

Well	TC-MOISER HILL 2-9-11					
Well Position	+N-S	0.0 usft	Northing:	1,394,698.69 usft	Latitude:	40.414730
	+E-W	0.0 usft	Easting:	3,195,277.62 usft	Longitude:	-104.798690
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,788.0 usft

Wellbore	JOB #2017-145-341				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	28/12/2016	8.28	66.87	52,450

Design	FINAL SURVEYS				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.0	0.0	0.0	80.44	

Survey Program	Date	10/06/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.0	20,526.0	FINAL SURVEYS (JOB #2017-145-341)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	4,813.0	0.0	0.0	0.0	0.00	0.00	0.00
25.0	0.00	15.00	25.0	4,788.0	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE										
450.0	2.73	12.99	449.8	4,363.2	9.9	2.3	3.9	0.64	0.64	0.00
497.0	3.03	12.99	496.8	4,316.2	12.2	2.8	4.8	0.64	0.64	0.00
782.0	5.17	1.65	781.0	4,032.0	32.3	4.9	10.2	0.80	0.75	-3.98
877.0	7.12	2.14	875.5	3,937.5	42.5	5.2	12.2	2.05	2.05	0.52
972.0	9.15	6.19	969.5	3,843.5	55.9	6.2	15.4	2.22	2.14	4.26
1,067.0	10.73	11.13	1,063.1	3,749.9	72.1	8.8	20.6	1.89	1.66	5.20
1,161.0	13.08	15.38	1,155.1	3,657.9	90.9	13.3	28.2	2.67	2.50	4.52
1,351.0	17.30	12.93	1,338.4	3,474.6	139.2	25.3	48.1	2.25	2.22	-1.29
1,446.0	17.47	12.10	1,429.1	3,383.9	166.9	31.5	58.7	0.32	0.18	-0.87
1,541.0	16.85	9.45	1,519.8	3,293.2	194.4	36.7	68.5	1.05	-0.65	-2.79

Survey Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
SURFACE CASING										
1,560.0	16.68	8.69	1,538.0	3,275.0	199.9	37.6	70.2	1.45	-0.88	-3.98
1,641.0	16.00	5.30	1,615.8	3,197.2	222.5	40.4	76.7	1.45	-0.84	-4.19
1,736.0	17.10	5.90	1,706.8	3,106.2	249.4	43.0	83.8	1.17	1.16	0.63
1,829.0	18.20	12.20	1,795.4	3,017.6	277.2	47.5	92.9	2.37	1.18	6.77
1,923.0	20.20	19.30	1,884.2	2,928.8	306.9	55.9	106.1	3.27	2.13	7.55
2,018.0	23.00	25.40	1,972.6	2,840.4	339.1	69.3	124.7	3.77	2.95	6.42
2,112.0	23.50	25.60	2,058.9	2,754.1	372.6	85.3	146.0	0.54	0.53	0.21
2,207.0	27.50	25.50	2,144.6	2,668.4	409.5	102.9	169.5	4.21	4.21	-0.11
2,301.0	30.30	25.30	2,226.9	2,586.1	450.5	122.4	195.5	2.98	2.98	-0.21
2,396.0	28.20	22.20	2,309.8	2,503.2	493.0	141.1	221.1	2.72	-2.21	-3.26
2,490.0	27.80	25.90	2,392.8	2,420.2	533.3	159.1	245.5	1.90	-0.43	3.94
2,585.0	26.00	23.50	2,477.5	2,335.5	572.3	177.1	269.7	2.21	-1.89	-2.53
2,679.0	25.50	30.30	2,562.2	2,250.8	608.7	195.5	293.9	3.19	-0.53	7.23
2,774.0	26.50	34.70	2,647.6	2,165.4	643.8	217.9	321.8	2.29	1.05	4.63
2,868.0	26.60	33.40	2,731.7	2,081.3	678.6	241.4	350.8	0.63	0.11	-1.38
2,962.0	25.90	32.00	2,816.0	1,997.0	713.6	263.9	378.7	0.99	-0.74	-1.49
3,057.0	22.70	29.30	2,902.6	1,910.4	747.2	283.9	404.0	3.56	-3.37	-2.84
3,151.0	24.80	28.50	2,988.6	1,824.4	780.3	302.2	427.5	2.26	2.23	-0.85
3,245.0	25.00	27.90	3,073.9	1,739.1	815.2	320.9	451.8	0.34	0.21	-0.64
3,340.0	24.90	27.20	3,160.0	1,653.0	850.7	339.4	476.0	0.33	-0.11	-0.74
3,434.0	26.00	28.40	3,244.9	1,568.1	886.4	358.2	500.5	1.29	1.17	1.28
3,528.0	22.30	26.10	3,330.7	1,482.3	920.6	375.9	523.6	4.06	-3.94	-2.45
3,623.0	22.40	27.00	3,418.5	1,394.5	952.9	392.0	544.8	0.38	0.11	0.95
3,717.0	23.90	27.70	3,504.9	1,308.1	985.7	409.0	567.0	1.62	1.60	0.74
3,811.0	25.00	30.30	3,590.5	1,222.5	1,019.7	427.9	591.3	1.64	1.17	2.77
3,906.0	26.10	29.10	3,676.2	1,136.8	1,055.3	448.2	617.2	1.28	1.16	-1.26
4,000.0	26.10	27.80	3,760.6	1,052.4	1,091.7	467.9	642.7	0.61	0.00	-1.38
4,095.0	26.20	27.00	3,845.9	967.1	1,128.9	487.2	667.9	0.39	0.11	-0.84
4,189.0	26.20	25.70	3,930.3	882.7	1,166.0	505.6	692.2	0.61	0.00	-1.38
4,284.0	25.60	24.30	4,015.7	797.3	1,203.6	523.1	715.7	0.90	-0.63	-1.47
4,402.0	27.30	25.30	4,121.4	691.6	1,251.3	545.2	745.4	1.49	1.44	0.85
4,497.0	25.80	27.10	4,206.3	606.7	1,289.4	563.9	770.2	1.79	-1.58	1.89
4,592.0	26.90	29.20	4,291.5	521.5	1,326.6	583.8	796.0	1.52	1.16	2.21
4,686.0	23.40	27.70	4,376.6	436.4	1,361.7	602.9	820.6	3.78	-3.72	-1.60
4,780.0	24.20	29.20	4,462.6	350.4	1,395.1	620.9	844.0	1.07	0.85	1.60
4,875.0	22.80	27.00	4,549.7	263.3	1,428.5	638.8	867.2	1.74	-1.47	-2.32
4,969.0	22.90	26.40	4,636.3	176.7	1,461.1	655.2	888.7	0.27	0.11	-0.64
5,064.0	24.80	28.10	4,723.2	89.8	1,495.2	672.8	911.8	2.13	2.00	1.79
5,158.0	24.00	28.30	4,808.8	4.2	1,529.4	691.1	935.5	0.86	-0.85	0.21
5,253.0	26.20	28.50	4,894.8	-81.8	1,564.9	710.3	960.3	2.32	2.32	0.21
5,348.0	24.10	24.90	4,980.8	-167.8	1,600.9	728.5	984.2	2.73	-2.21	-3.79
5,442.0	24.40	29.50	5,066.5	-253.5	1,635.2	746.1	1,007.3	2.03	0.32	4.89
5,537.0	24.20	27.30	5,153.1	-340.1	1,669.6	764.7	1,031.4	0.98	-0.21	-2.32
5,631.0	24.50	28.50	5,238.7	-425.7	1,703.8	782.9	1,055.0	0.62	0.32	1.28
5,725.0	24.30	25.50	5,324.4	-511.4	1,738.4	800.5	1,078.1	1.34	-0.21	-3.19
5,820.0	23.70	28.80	5,411.1	-598.1	1,772.8	818.1	1,101.2	1.55	-0.63	3.47
5,915.0	24.70	32.40	5,497.8	-684.8	1,806.3	837.9	1,126.3	1.88	1.05	3.79
6,009.0	25.90	35.80	5,582.8	-769.8	1,839.5	860.5	1,154.0	2.00	1.28	3.62
6,103.0	28.00	32.20	5,666.6	-853.6	1,874.9	884.2	1,183.3	2.83	2.23	-3.83
6,198.0	27.60	22.50	5,750.7	-937.7	1,914.1	904.6	1,209.9	4.78	-0.42	-10.21
6,292.0	21.70	18.10	5,836.1	-1,023.1	1,950.8	918.3	1,229.5	6.57	-6.28	-4.68
6,386.0	22.70	19.00	5,923.1	-1,110.1	1,984.4	929.6	1,246.3	1.12	1.06	0.96

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well TC-MOISER HILL 2-9-11
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,481.0	25.50	22.70	6,009.8	-1,196.8	2,020.6	943.5	1,265.9	3.35	2.95	3.89
6,575.0	24.80	24.00	6,094.9	-1,281.9	2,057.3	959.3	1,287.6	0.95	-0.74	1.38
6,670.0	25.20	22.30	6,181.0	-1,368.0	2,094.2	975.1	1,309.3	0.87	0.42	-1.79
6,764.0	25.50	18.50	6,266.0	-1,453.0	2,131.9	989.1	1,329.4	1.76	0.32	-4.04
6,858.0	24.20	16.60	6,351.2	-1,538.2	2,169.6	1,001.0	1,347.4	1.62	-1.38	-2.02
6,952.0	22.80	22.10	6,437.5	-1,624.5	2,204.9	1,013.4	1,365.5	2.77	-1.49	5.85
7,046.0	20.40	24.80	6,524.9	-1,711.9	2,236.7	1,027.1	1,384.3	2.76	-2.55	2.87
KOP										
7,106.0	20.16	30.45	6,581.1	-1,768.1	2,255.1	1,036.7	1,396.8	3.29	-0.41	9.42
7,140.0	20.10	33.70	6,613.1	-1,800.1	2,265.0	1,042.9	1,404.6	3.29	-0.17	9.55
7,235.0	30.70	60.20	6,699.0	-1,886.0	2,290.8	1,073.2	1,438.8	16.12	11.16	27.89
7,329.0	39.30	68.50	6,776.0	-1,963.0	2,313.7	1,121.9	1,490.5	10.44	9.15	8.83
7,423.0	45.80	66.30	6,845.2	-2,032.2	2,338.2	1,180.5	1,552.4	7.09	6.91	-2.34
7,518.0	55.20	69.70	6,905.6	-2,092.6	2,365.4	1,248.4	1,623.9	10.27	9.89	3.58
7,612.0	61.00	70.60	6,955.2	-2,142.2	2,392.5	1,323.4	1,702.4	6.22	6.17	0.96
7,707.0	63.70	75.80	6,999.3	-2,186.3	2,416.8	1,404.0	1,785.8	5.62	2.84	5.47
7,801.0	78.10	86.20	7,030.1	-2,217.1	2,430.3	1,491.4	1,874.3	18.52	15.32	11.06
-460ft SETBACK X-OVER										
7,948.7	84.68	89.50	7,052.2	-2,239.2	2,435.7	1,637.2	2,019.0	4.97	4.45	2.24
7,985.0	86.30	90.30	7,055.1	-2,242.1	2,435.8	1,673.4	2,054.7	4.97	4.46	2.20
8,080.0	86.70	90.30	7,060.9	-2,247.9	2,435.3	1,768.2	2,148.1	0.42	0.42	0.00
8,173.0	87.30	90.40	7,065.7	-2,252.7	2,434.7	1,861.1	2,239.6	0.65	0.65	0.11
8,268.0	87.70	91.00	7,069.9	-2,256.9	2,433.5	1,956.0	2,333.0	0.76	0.42	0.63
8,363.0	88.30	91.00	7,073.2	-2,260.2	2,431.9	2,050.9	2,426.3	0.63	0.63	0.00
HZ LANDING POINT										
8,457.0	89.00	91.10	7,075.4	-2,262.4	2,430.2	2,144.9	2,518.7	0.75	0.74	0.11
8,552.0	89.00	91.10	7,077.1	-2,264.1	2,428.3	2,239.8	2,612.0	0.00	0.00	0.00
8,646.0	89.20	91.60	7,078.5	-2,265.5	2,426.1	2,333.8	2,704.3	0.57	0.21	0.53
8,740.0	89.10	92.00	7,079.9	-2,266.9	2,423.2	2,427.8	2,796.5	0.44	-0.11	0.43
8,835.0	89.40	91.90	7,081.2	-2,268.2	2,419.9	2,522.7	2,889.5	0.33	0.32	-0.11
8,930.0	90.00	92.40	7,081.7	-2,268.7	2,416.4	2,617.6	2,982.6	0.82	0.63	0.53
9,025.0	90.00	92.80	7,081.7	-2,268.7	2,412.1	2,712.5	3,075.4	0.42	0.00	0.42
9,120.0	90.20	93.10	7,081.5	-2,268.5	2,407.2	2,807.4	3,168.2	0.38	0.21	0.32
9,214.0	90.20	92.10	7,081.2	-2,268.2	2,402.9	2,901.3	3,260.1	1.06	0.00	-1.06
9,309.0	90.20	90.70	7,080.8	-2,267.8	2,400.6	2,996.3	3,353.3	1.47	0.00	-1.47
9,404.0	90.10	90.90	7,080.6	-2,267.6	2,399.3	3,091.3	3,446.8	0.24	-0.11	0.21
9,499.0	90.60	91.50	7,080.0	-2,267.0	2,397.3	3,186.2	3,540.1	0.82	0.53	0.63
9,593.0	91.10	91.70	7,078.6	-2,265.6	2,394.6	3,280.2	3,632.3	0.57	0.53	0.21
9,688.0	91.00	92.20	7,076.9	-2,263.9	2,391.4	3,375.1	3,725.4	0.54	-0.11	0.53
9,783.0	91.10	92.30	7,075.1	-2,262.1	2,387.7	3,470.0	3,818.4	0.15	0.11	0.11
9,878.0	91.10	91.50	7,073.3	-2,260.3	2,384.5	3,565.0	3,911.5	0.84	0.00	-0.84
9,972.0	91.10	89.90	7,071.5	-2,258.5	2,383.4	3,658.9	4,003.9	1.70	0.00	-1.70
10,066.0	91.10	89.10	7,069.7	-2,256.7	2,384.2	3,752.9	4,096.7	0.85	0.00	-0.85
10,161.0	89.90	89.30	7,068.9	-2,255.9	2,385.5	3,847.9	4,190.6	1.28	-1.26	0.21
10,255.0	90.00	89.40	7,069.0	-2,256.0	2,386.6	3,941.9	4,283.5	0.15	0.11	0.11
10,349.0	90.10	89.80	7,068.9	-2,255.9	2,387.3	4,035.9	4,376.3	0.44	0.11	0.43
10,443.0	89.90	90.20	7,068.9	-2,255.9	2,387.3	4,129.9	4,469.0	0.48	-0.21	0.43
10,537.0	90.20	90.30	7,068.8	-2,255.8	2,386.8	4,223.9	4,561.6	0.34	0.32	0.11
10,632.0	90.20	91.10	7,068.5	-2,255.5	2,385.7	4,318.9	4,655.1	0.84	0.00	0.84
10,726.0	90.20	91.80	7,068.1	-2,255.1	2,383.3	4,412.8	4,747.4	0.74	0.00	0.74
10,820.0	90.20	92.10	7,067.8	-2,254.8	2,380.1	4,506.8	4,839.5	0.32	0.00	0.32
10,914.0	90.00	91.20	7,067.6	-2,254.6	2,377.4	4,600.7	4,931.7	0.98	-0.21	-0.96
11,009.0	90.00	89.60	7,067.6	-2,254.6	2,376.7	4,695.7	5,025.2	1.68	0.00	-1.68

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well TC-MOISER HILL 2-9-11
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,103.0	90.20	87.70	7,067.5	-2,254.5	2,379.0	4,789.7	5,118.3	2.03	0.21	-2.02
11,198.0	90.10	88.40	7,067.2	-2,254.2	2,382.2	4,884.7	5,212.4	0.74	-0.11	0.74
11,293.0	89.90	89.40	7,067.2	-2,254.2	2,384.0	4,979.6	5,306.4	1.07	-0.21	1.05
11,387.0	90.10	89.60	7,067.2	-2,254.2	2,384.8	5,073.6	5,399.2	0.30	0.21	0.21
11,481.0	90.20	89.80	7,067.0	-2,254.0	2,385.3	5,167.6	5,492.0	0.24	0.11	0.21
11,576.0	90.00	90.20	7,066.8	-2,253.8	2,385.3	5,262.6	5,585.7	0.47	-0.21	0.42
11,670.0	90.10	89.80	7,066.7	-2,253.7	2,385.3	5,356.6	5,678.4	0.44	0.11	-0.43
11,765.0	89.90	89.20	7,066.7	-2,253.7	2,386.1	5,451.6	5,772.2	0.67	-0.21	-0.63
11,860.0	90.20	88.70	7,066.7	-2,253.7	2,387.9	5,546.6	5,866.1	0.61	0.32	-0.53
11,955.0	90.00	90.30	7,066.5	-2,253.5	2,388.7	5,641.6	5,960.0	1.70	-0.21	1.68
12,050.0	90.20	92.50	7,066.3	-2,253.3	2,386.4	5,736.6	6,053.2	2.33	0.21	2.32
12,145.0	90.10	93.50	7,066.1	-2,253.1	2,381.4	5,831.4	6,145.9	1.06	-0.11	1.05
12,239.0	90.30	93.60	7,065.7	-2,252.7	2,375.6	5,925.3	6,237.5	0.24	0.21	0.11
12,334.0	90.10	92.60	7,065.4	-2,252.4	2,370.5	6,020.1	6,330.2	1.07	-0.21	-1.05
12,429.0	90.10	91.80	7,065.2	-2,252.2	2,366.8	6,115.0	6,423.2	0.84	0.00	-0.84
12,522.0	89.90	90.80	7,065.2	-2,252.2	2,364.7	6,208.0	6,514.5	1.10	-0.22	-1.08
12,617.0	90.10	90.20	7,065.2	-2,252.2	2,363.9	6,303.0	6,608.1	0.67	0.21	-0.63
12,712.0	90.10	90.50	7,065.1	-2,252.1	2,363.3	6,398.0	6,701.6	0.32	0.00	0.32
12,806.0	90.20	91.20	7,064.8	-2,251.8	2,361.9	6,492.0	6,794.1	0.75	0.11	0.74
12,901.0	90.20	91.60	7,064.5	-2,251.5	2,359.6	6,587.0	6,887.4	0.42	0.00	0.42
12,996.0	90.20	91.70	7,064.2	-2,251.2	2,356.9	6,681.9	6,980.6	0.11	0.00	0.11
13,091.0	90.20	92.50	7,063.8	-2,250.8	2,353.4	6,776.9	7,073.6	0.84	0.00	0.84
13,185.0	90.10	91.60	7,063.6	-2,250.6	2,350.0	6,870.8	7,165.7	0.96	-0.11	-0.96
13,280.0	90.10	90.90	7,063.4	-2,250.4	2,347.9	6,965.8	7,259.0	0.74	0.00	-0.74
13,375.0	90.00	90.30	7,063.3	-2,250.3	2,346.9	7,060.8	7,352.5	0.64	-0.11	-0.63
13,470.0	90.20	89.10	7,063.2	-2,250.2	2,347.4	7,155.8	7,446.2	1.28	0.21	-1.26
13,564.0	90.20	88.30	7,062.9	-2,249.9	2,349.6	7,249.7	7,539.3	0.85	0.00	-0.85
13,659.0	90.10	89.20	7,062.6	-2,249.6	2,351.6	7,344.7	7,633.3	0.95	-0.11	0.95
13,754.0	90.20	89.90	7,062.4	-2,249.4	2,352.4	7,439.7	7,727.1	0.74	0.11	0.74
13,848.0	90.10	90.40	7,062.1	-2,249.1	2,352.1	7,533.7	7,819.7	0.54	-0.11	0.53
13,942.0	90.30	90.70	7,061.8	-2,248.8	2,351.2	7,627.7	7,912.3	0.38	0.21	0.32
14,037.0	90.10	90.60	7,061.4	-2,248.4	2,350.2	7,722.7	8,005.8	0.24	-0.21	-0.11
14,132.0	90.20	89.30	7,061.2	-2,248.2	2,350.2	7,817.7	8,099.5	1.37	0.11	-1.37
14,226.0	90.20	88.00	7,060.9	-2,247.9	2,352.5	7,911.7	8,192.5	1.38	0.00	-1.38
14,321.0	90.20	87.80	7,060.5	-2,247.5	2,355.9	8,006.6	8,286.7	0.21	0.00	-0.21
14,415.0	90.20	88.40	7,060.2	-2,247.2	2,359.1	8,100.6	8,379.8	0.64	0.00	0.64
14,510.0	90.20	89.50	7,059.9	-2,246.9	2,360.8	8,195.5	8,473.8	1.16	0.00	1.16
14,604.0	90.20	89.50	7,059.6	-2,246.6	2,361.6	8,289.5	8,566.6	0.00	0.00	0.00
14,699.0	90.00	90.20	7,059.4	-2,246.4	2,361.9	8,384.5	8,660.3	0.77	-0.21	0.74
14,793.0	90.10	90.70	7,059.3	-2,246.3	2,361.1	8,478.5	8,752.9	0.54	0.11	0.53
14,888.0	90.10	89.70	7,059.1	-2,246.1	2,360.8	8,573.5	8,846.5	1.05	0.00	-1.05
14,983.0	90.00	88.50	7,059.1	-2,246.1	2,362.3	8,668.5	8,940.5	1.27	-0.11	-1.26
15,077.0	90.90	87.30	7,058.3	-2,245.3	2,365.7	8,762.4	9,033.7	1.60	0.96	-1.28
15,172.0	91.10	87.30	7,056.7	-2,243.7	2,370.2	8,857.3	9,128.0	0.21	0.21	0.00
15,267.0	91.10	86.90	7,054.8	-2,241.8	2,375.0	8,952.2	9,222.3	0.42	0.00	-0.42
15,362.0	91.00	88.10	7,053.1	-2,240.1	2,379.2	9,047.1	9,316.6	1.27	-0.11	1.26
15,456.0	90.90	86.50	7,051.5	-2,238.5	2,383.6	9,141.0	9,409.9	1.71	-0.11	-1.70
15,550.0	91.20	86.80	7,049.8	-2,236.8	2,389.1	9,234.8	9,503.3	0.45	0.32	0.32
15,645.0	91.00	90.10	7,048.0	-2,235.0	2,391.6	9,329.7	9,597.3	3.48	-0.21	3.47
15,740.0	90.90	92.30	7,046.4	-2,233.4	2,389.7	9,424.7	9,690.7	2.32	-0.11	2.32
15,834.0	90.10	93.20	7,045.6	-2,232.6	2,385.1	9,518.6	9,782.5	1.28	-0.85	0.96
15,929.0	90.20	93.80	7,045.3	-2,232.3	2,379.3	9,613.4	9,875.0	0.64	0.11	0.63
16,024.0	90.00	92.20	7,045.2	-2,232.2	2,374.4	9,708.3	9,967.8	1.70	-0.21	-1.68

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well TC-MOISER HILL 2-9-11
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,118.0	90.00	91.60	7,045.2	-2,232.2	2,371.3	9,802.2	10,059.9	0.64	0.00	-0.64
16,212.0	90.00	89.60	7,045.2	-2,232.2	2,370.3	9,896.2	10,152.4	2.13	0.00	-2.13
16,308.0	90.00	85.80	7,045.2	-2,232.2	2,374.1	9,992.1	10,247.6	3.96	0.00	-3.96
16,403.0	90.00	87.40	7,045.2	-2,232.2	2,379.8	10,086.9	10,342.1	1.68	0.00	1.68
16,498.0	89.90	88.90	7,045.3	-2,232.3	2,382.8	10,181.9	10,436.2	1.58	-0.11	1.58
16,593.0	90.10	90.20	7,045.3	-2,232.3	2,383.6	10,276.9	10,530.0	1.38	0.21	1.37
16,688.0	90.00	92.40	7,045.2	-2,232.2	2,381.4	10,371.8	10,623.3	2.32	-0.11	2.32
16,782.0	89.90	93.70	7,045.3	-2,232.3	2,376.4	10,465.7	10,715.0	1.39	-0.11	1.38
16,877.0	90.20	93.80	7,045.2	-2,232.2	2,370.2	10,560.5	10,807.5	0.33	0.32	0.11
16,972.0	90.80	92.50	7,044.3	-2,231.3	2,365.0	10,655.3	10,900.1	1.51	0.63	-1.37
17,066.0	91.00	92.40	7,042.9	-2,229.9	2,361.0	10,749.3	10,992.1	0.24	0.21	-0.11
17,161.0	91.20	92.90	7,041.0	-2,228.0	2,356.6	10,844.1	11,084.9	0.57	0.21	0.53
17,255.0	91.10	92.30	7,039.2	-2,226.2	2,352.3	10,938.0	11,176.8	0.65	-0.11	-0.64
17,350.0	91.10	92.30	7,037.3	-2,224.3	2,348.5	11,032.9	11,269.7	0.00	0.00	0.00
17,445.0	91.10	92.20	7,035.5	-2,222.5	2,344.8	11,127.8	11,362.7	0.11	0.00	-0.11
17,539.0	90.00	91.80	7,034.6	-2,221.6	2,341.5	11,221.8	11,454.8	1.25	-1.17	-0.43
17,633.0	90.00	91.20	7,034.6	-2,221.6	2,339.0	11,315.7	11,547.0	0.64	0.00	-0.64
17,728.0	90.10	91.50	7,034.5	-2,221.5	2,336.8	11,410.7	11,640.3	0.33	0.11	0.32
17,823.0	90.10	90.90	7,034.4	-2,221.4	2,334.8	11,505.7	11,733.7	0.63	0.00	-0.63
17,917.0	90.20	90.10	7,034.1	-2,221.1	2,334.0	11,599.7	11,826.2	0.86	0.11	-0.85
18,012.0	90.20	89.90	7,033.8	-2,220.8	2,334.0	11,694.7	11,919.9	0.21	0.00	-0.21
18,107.0	90.20	89.00	7,033.5	-2,220.5	2,334.9	11,789.7	12,013.7	0.95	0.00	-0.95
18,202.0	90.20	88.50	7,033.1	-2,220.1	2,337.0	11,884.7	12,107.7	0.53	0.00	-0.53
18,297.0	90.20	89.20	7,032.8	-2,219.8	2,338.9	11,979.6	12,201.7	0.74	0.00	0.74
18,392.0	90.20	90.00	7,032.5	-2,219.5	2,339.5	12,074.6	12,295.5	0.84	0.00	0.84
18,487.0	90.10	89.30	7,032.2	-2,219.2	2,340.1	12,169.6	12,389.3	0.74	-0.11	-0.74
18,581.0	90.10	88.20	7,032.0	-2,219.0	2,342.2	12,263.6	12,482.3	1.17	0.00	-1.17
18,675.0	90.20	88.00	7,031.8	-2,218.8	2,345.3	12,357.5	12,575.4	0.24	0.11	-0.21
18,770.0	90.20	88.20	7,031.5	-2,218.5	2,348.4	12,452.5	12,669.6	0.21	0.00	0.21
18,865.0	90.10	88.70	7,031.2	-2,218.2	2,351.0	12,547.5	12,763.7	0.54	-0.11	0.53
18,960.0	90.10	88.70	7,031.1	-2,218.1	2,353.2	12,642.4	12,857.7	0.00	0.00	0.00
19,055.0	90.30	88.90	7,030.7	-2,217.7	2,355.1	12,737.4	12,951.7	0.30	0.21	0.21
19,149.0	90.20	89.20	7,030.3	-2,217.3	2,356.7	12,831.4	13,044.6	0.34	-0.11	0.32
19,244.0	90.20	89.60	7,030.0	-2,217.0	2,357.7	12,926.4	13,138.4	0.42	0.00	0.42
19,338.0	90.20	90.20	7,029.7	-2,216.7	2,357.9	13,020.4	13,231.2	0.64	0.00	0.64
19,433.0	90.10	89.90	7,029.4	-2,216.4	2,357.8	13,115.4	13,324.8	0.33	-0.11	-0.32
19,526.0	90.10	90.20	7,029.2	-2,216.2	2,357.7	13,208.4	13,416.5	0.32	0.00	0.32
19,621.0	90.20	89.40	7,029.0	-2,216.0	2,358.0	13,303.4	13,510.3	0.85	0.11	-0.84
19,715.0	90.20	89.90	7,028.7	-2,215.7	2,358.6	13,397.4	13,603.0	0.53	0.00	0.53
19,809.0	90.10	89.50	7,028.4	-2,215.4	2,359.1	13,491.4	13,695.8	0.44	-0.11	-0.43
19,904.0	90.20	89.60	7,028.2	-2,215.2	2,359.8	13,586.4	13,789.6	0.15	0.11	0.11
19,999.0	90.10	89.80	7,027.9	-2,214.9	2,360.3	13,681.4	13,883.4	0.24	-0.11	0.21
20,093.0	90.10	89.40	7,027.8	-2,214.8	2,361.0	13,775.4	13,976.2	0.43	0.00	-0.43
20,187.0	90.20	88.80	7,027.5	-2,214.5	2,362.5	13,869.4	14,069.1	0.65	0.11	-0.64
20,282.0	90.20	88.30	7,027.2	-2,214.2	2,364.9	13,964.3	14,163.2	0.53	0.00	-0.53
20,376.0	90.10	88.80	7,026.9	-2,213.9	2,367.3	14,058.3	14,256.2	0.54	-0.11	0.53
LAST SURVEY - JUNE 10, 2017										
20,471.0	90.10	88.20	7,026.8	-2,213.8	2,369.7	14,153.3	14,350.3	0.63	0.00	-0.63
EXTRAPOLATION TO TD										
20,526.0	90.10	88.20	7,026.7	-2,213.7	2,371.5	14,208.2	14,404.8	0.00	0.00	0.00

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well TC-MOISER HILL 2-9-11
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB @ 4813.0usft (PATT 341)
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	MD Reference:	KB @ 4813.0usft (PATT 341)
Well:	TC-MOISER HILL 2-9-11	North Reference:	True
Wellbore:	JOB #2017-145-341	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

EXIST VERT MOEN	0.00	0.00	7,436.0	462.7	587.5	1,395,165.99	3,195,861.46	40.416000	-104.796580
- survey misses target center by 2030.0usft at 7235.0usft MD (6699.0 TVD, 2290.8 N, 1073.2 E)									
- Circle (radius 30.0)									
EXIST VERT DRAKE	0.00	0.00	7,533.0	-2,018.3	-607.1	1,392,675.75	3,194,686.53	40.409190	-104.800870
- survey misses target center by 4565.1usft at 6009.0usft MD (5582.8 TVD, 1839.5 N, 860.5 E)									
- Circle (radius 30.0)									
IP #1 - TC-MOISER H	0.00	0.00	7,080.0	2,413.1	3,861.6	1,397,142.16	3,199,119.87	40.421353	-104.784821
- survey misses target center by 29.6usft at 10175.0usft MD (7068.9 TVD, 2385.7 N, 3861.9 E)									
- Point									
ABDN VERT AIMS #1	0.00	0.00	7,383.0	-2,205.2	11,147.8	1,392,581.79	3,206,442.06	40.408670	-104.758660
- survey misses target center by 4560.3usft at 17584.1usft MD (7034.6 TVD, 2340.2 N, 11266.8 E)									
- Circle (radius 30.0)									
BHL - TC-MOISER HI	0.00	0.00	7,102.0	2,634.5	14,255.7	1,397,445.71	3,209,511.46	40.421950	-104.747490
- survey misses target center by 277.6usft at 20526.0usft MD (7026.7 TVD, 2371.5 N, 14208.2 E)									
- Point									
ABDN VERT MCCLO	0.00	0.00	7,407.0	1,746.6	1,834.4	1,396,459.66	3,197,098.05	40.419524	-104.792102
- survey misses target center by 768.5usft at 8168.4usft MD (7065.5 TVD, 2434.7 N, 1856.5 E)									
- Circle (radius 30.0)									
IP #3 - TC-MOISER H	0.00	0.00	7,102.0	2,394.0	9,138.9	1,397,164.80	3,204,396.95	40.421297	-104.765867
- survey misses target center by 51.5usft at 15453.6usft MD (7051.6 TVD, 2383.4 N, 9138.6 E)									
- Point									
EXIST VERT MOEN #	0.00	0.00	7,458.0	225.9	-672.2	1,394,919.24	3,194,603.69	40.415350	-104.801104
- survey misses target center by 2792.9usft at 6986.2usft MD (6469.1 TVD, 2216.9 N, 1018.4 E)									
- Circle (radius 30.0)									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
450.0	449.8	9.9	2.3	START NUDGE
1,560.0	1,538.0	199.9	37.6	SURFACE CASING
7,106.0	6,581.1	2,255.1	1,036.7	KOP
7,948.7	7,052.2	2,435.7	1,637.2	~460ft SETBACK X-OVER
8,457.0	7,075.4	2,430.2	2,144.9	HZ LANDING POINT
20,471.0	7,026.8	2,369.7	14,153.3	LAST SURVEY - JUNE 10, 2017
20,526.0	7,026.7	2,371.5	14,208.2	EXTRAPOLATION TO TD

Checked By: _____ Approved By: _____ Date: _____