

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

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

TC-HILAND KNOLLS 4-9-11

ORIGINAL WELLBORE

09 January, 2017

Plan: PROPOSAL #2

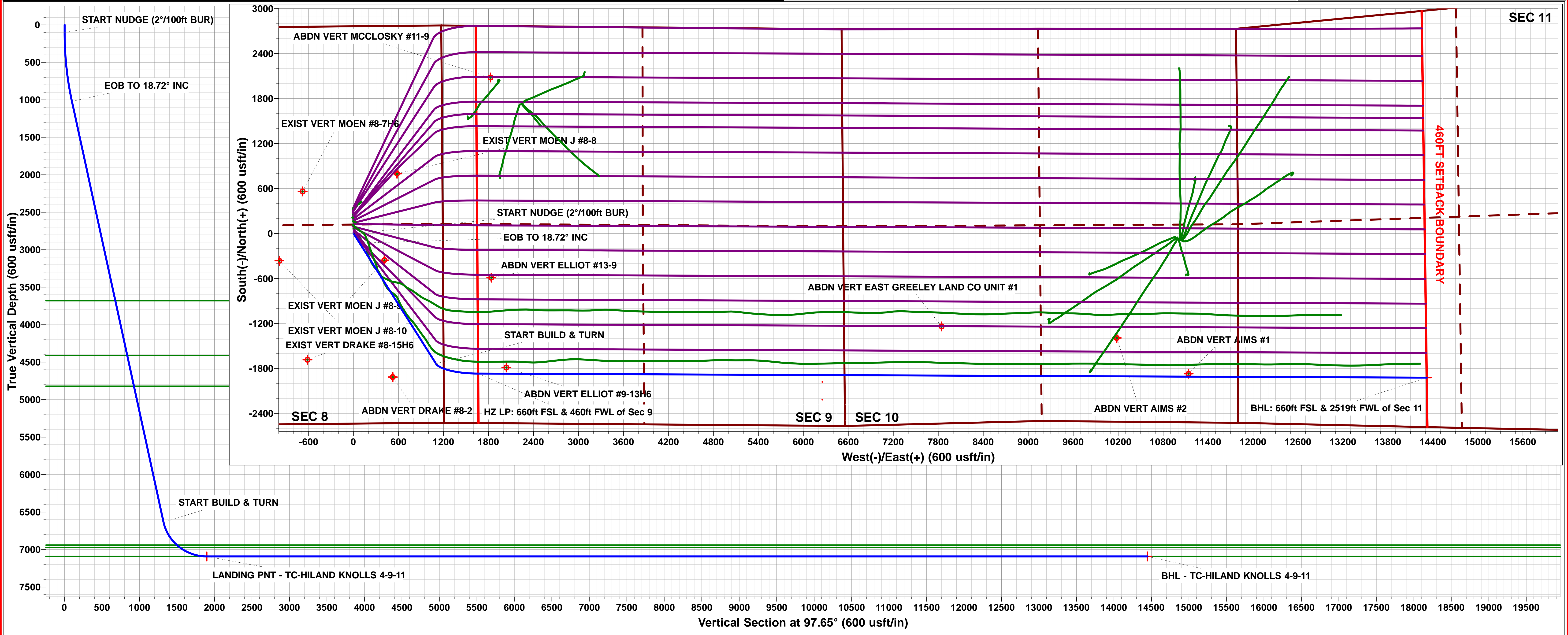
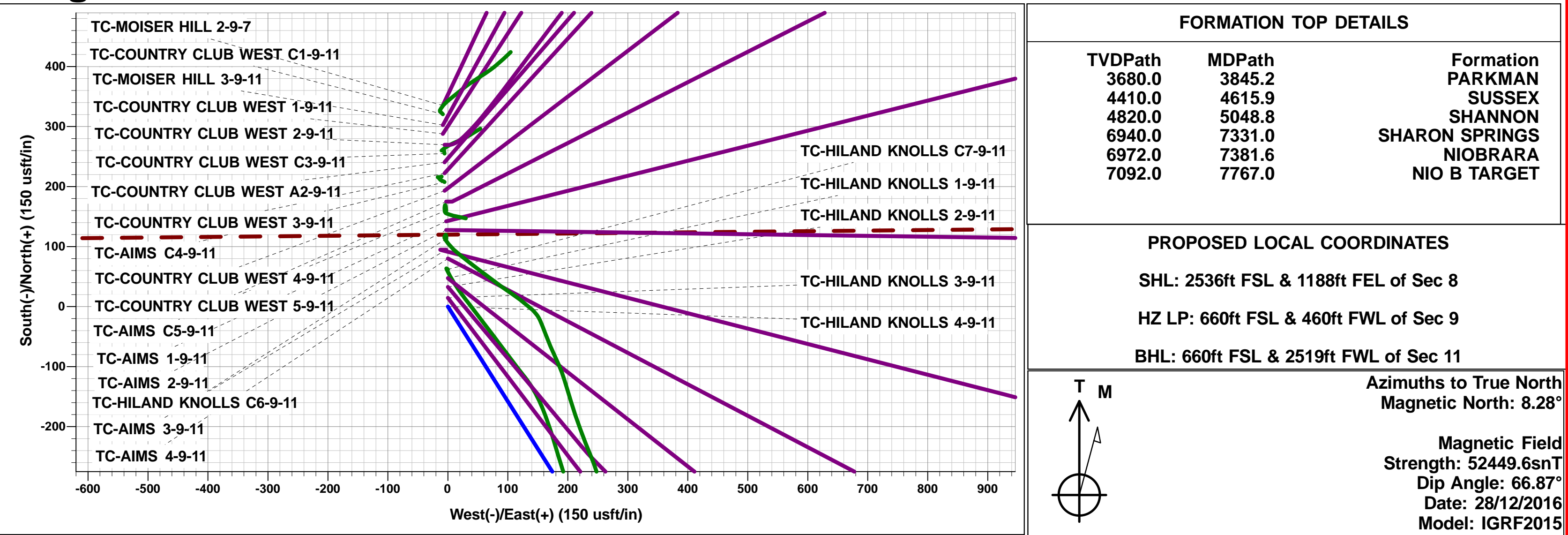




Project: WELD COUNTY, COLORADO (NAD 83)
Site: NE SE SEC. 8 T5N R66W 6th P.M.
Well: TC-HILAND KNOLLS 4-9-11
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 2536ft FSL & 1188ft FEL of Sec 8	
100.0	100.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1019.3	1035.9	18.72	147.67	-128.0	81.0	97.3	151.5	EOB TO 18.72° INC	
6636.3	6966.5	18.72	147.67	-1736.3	1098.8	1320.1	2054.8	START BUILD & TURN	
7092.0	7767.0	90.00	90.25	-1868.9	1662.6	1896.5	2647.0	HZ LP: 660ft FSL & 460ft FWL of Sec 9	
7092.0	20421.5	90.00	90.25	-1923.1	14316.9	14445.5	15301.5	BHL: 660ft FSL & 2519ft FWL of Sec 11	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
LANDING PNT - TC-HILAND KNOLLS 4-9-11	7092.0	-1868.9	1662.6	40.408680	-104.792690
BHL - TC-HILAND KNOLLS 4-9-11	7092.0	-1923.1	14317.0	40.408520	-104.747250



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well TC-HILAND KNOLLS 4-9-11
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4809.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	North Reference:	True
Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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
From:	Lat/Long	Easting:	3,195,288.63 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.413810
		Longitude:	-104.798660
		Grid Convergence:	0.45 °

Well	TC-HILAND KNOLLS 4-9-11					
Well Position	+N/-S	0.0 usft	Northing:	1,394,363.62 usfi	Latitude:	40.413810
	+E/-W	0.0 usft	Easting:	3,195,288.63 usfi	Longitude:	-104.798660
Position Uncertainty		0.0 usft	Wellhead Elevation:	usfi	Ground Level:	4,793.0 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	28/12/2016	8.28	66.87	52,450

Design	PROPOSAL #2				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	97.65	

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.0	0.00	0.00	0.0	-4,809.0	0.0	0.0	0.00	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	-4,709.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,035.9	18.72	147.67	1,019.4	-3,789.6	-128.0	81.0	2.00	2.00	0.00	147.67	
6,966.5	18.72	147.67	6,636.2	1,827.2	-1,736.3	1,098.8	0.00	0.00	0.00	0.00	
7,767.0	90.00	90.25	7,092.0	2,283.0	-1,868.9	1,662.6	10.00	8.90	-7.17	-58.82	LANDING PNT - TC
20,421.5	90.00	90.25	7,092.0	2,283.0	-1,923.1	14,317.0	0.00	0.00	0.00	0.00	BHL - TC-HILAND I

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well TC-HILAND KNOLLS 4-9-11
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4809.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	North Reference:	True
Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
SHL: 2536ft FSL & 1188ft FEL of Sec 8										
0.0	0.00	0.00	0.0	4,809.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
100.0	0.00	0.00	100.0	4,709.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	2.00	147.67	200.0	4,609.02	-1.5	0.9	1.1	2.00	2.00	0.00
300.0	4.00	147.67	299.8	4,509.16	-5.9	3.7	4.5	2.00	2.00	0.00
400.0	6.00	147.67	399.5	4,409.55	-13.3	8.4	10.1	2.00	2.00	0.00
500.0	8.00	147.67	498.7	4,310.30	-23.6	14.9	17.9	2.00	2.00	0.00
600.0	10.00	147.67	597.5	4,211.53	-36.8	23.3	28.0	2.00	2.00	0.00
700.0	12.00	147.67	695.6	4,113.38	-52.9	33.5	40.2	2.00	2.00	0.00
800.0	14.00	147.67	793.1	4,015.94	-71.9	45.5	54.7	2.00	2.00	0.00
900.0	16.00	147.67	889.6	3,919.36	-93.8	59.3	71.3	2.00	2.00	0.00
1,000.0	18.00	147.67	985.3	3,823.73	-118.5	75.0	90.1	2.00	2.00	0.00
EOB TO 18.72° INC										
1,035.9	18.72	147.67	1,019.3	3,789.66	-128.0	81.0	97.3	2.00	2.00	0.00
1,100.0	18.72	147.67	1,080.1	3,728.95	-145.4	92.0	110.6	0.00	0.00	0.00
1,200.0	18.72	147.67	1,174.8	3,634.24	-172.5	109.2	131.2	0.00	0.00	0.00
1,300.0	18.72	147.67	1,269.5	3,539.53	-199.7	126.3	151.8	0.00	0.00	0.00
1,400.0	18.72	147.67	1,364.2	3,444.82	-226.8	143.5	172.4	0.00	0.00	0.00
1,500.0	18.72	147.67	1,458.9	3,350.11	-253.9	160.7	193.0	0.00	0.00	0.00
1,600.0	18.72	147.67	1,553.6	3,255.40	-281.0	177.8	213.7	0.00	0.00	0.00
1,700.0	18.72	147.67	1,648.3	3,160.69	-308.1	195.0	234.3	0.00	0.00	0.00
1,800.0	18.72	147.67	1,743.0	3,065.97	-335.2	212.2	254.9	0.00	0.00	0.00
1,900.0	18.72	147.67	1,837.7	2,971.26	-362.4	229.3	275.5	0.00	0.00	0.00
2,000.0	18.72	147.67	1,932.4	2,876.55	-389.5	246.5	296.1	0.00	0.00	0.00
2,100.0	18.72	147.67	2,027.2	2,781.84	-416.6	263.6	316.7	0.00	0.00	0.00
2,200.0	18.72	147.67	2,121.9	2,687.13	-443.7	280.8	337.4	0.00	0.00	0.00
2,300.0	18.72	147.67	2,216.6	2,592.42	-470.8	298.0	358.0	0.00	0.00	0.00
2,400.0	18.72	147.67	2,311.3	2,497.71	-498.0	315.1	378.6	0.00	0.00	0.00
2,500.0	18.72	147.67	2,406.0	2,403.00	-525.1	332.3	399.2	0.00	0.00	0.00
2,600.0	18.72	147.67	2,500.7	2,308.29	-552.2	349.4	419.8	0.00	0.00	0.00
2,700.0	18.72	147.67	2,595.4	2,213.58	-579.3	366.6	440.5	0.00	0.00	0.00
2,800.0	18.72	147.67	2,690.1	2,118.87	-606.4	383.8	461.1	0.00	0.00	0.00
2,900.0	18.72	147.67	2,784.8	2,024.16	-633.5	400.9	481.7	0.00	0.00	0.00
3,000.0	18.72	147.67	2,879.6	1,929.45	-660.7	418.1	502.3	0.00	0.00	0.00
3,100.0	18.72	147.67	2,974.3	1,834.74	-687.8	435.2	522.9	0.00	0.00	0.00
3,200.0	18.72	147.67	3,069.0	1,740.03	-714.9	452.4	543.6	0.00	0.00	0.00
3,300.0	18.72	147.67	3,163.7	1,645.32	-742.0	469.6	564.2	0.00	0.00	0.00
3,400.0	18.72	147.67	3,258.4	1,550.60	-769.1	486.7	584.8	0.00	0.00	0.00
3,500.0	18.72	147.67	3,353.1	1,455.89	-796.3	503.9	605.4	0.00	0.00	0.00
3,600.0	18.72	147.67	3,447.8	1,361.18	-823.4	521.1	626.0	0.00	0.00	0.00
3,700.0	18.72	147.67	3,542.5	1,266.47	-850.5	538.2	646.6	0.00	0.00	0.00
3,800.0	18.72	147.67	3,637.2	1,171.76	-877.6	555.4	667.3	0.00	0.00	0.00
PARKMAN										
3,845.2	18.72	147.67	3,680.0	1,129.00	-889.9	563.1	676.6	0.00	0.00	0.00
3,900.0	18.72	147.67	3,731.9	1,077.05	-904.7	572.5	687.9	0.00	0.00	0.00
4,000.0	18.72	147.67	3,826.7	982.34	-931.8	589.7	708.5	0.00	0.00	0.00
4,100.0	18.72	147.67	3,921.4	887.63	-959.0	606.9	729.1	0.00	0.00	0.00
4,200.0	18.72	147.67	4,016.1	792.92	-986.1	624.0	749.7	0.00	0.00	0.00
4,300.0	18.72	147.67	4,110.8	698.21	-1,013.2	641.2	770.4	0.00	0.00	0.00
4,400.0	18.72	147.67	4,205.5	603.50	-1,040.3	658.3	791.0	0.00	0.00	0.00
4,500.0	18.72	147.67	4,300.2	508.79	-1,067.4	675.5	811.6	0.00	0.00	0.00
4,600.0	18.72	147.67	4,394.9	414.08	-1,094.6	692.7	832.2	0.00	0.00	0.00
SUSSEX										

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
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Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,615.9	18.72	147.67	4,410.0	399.00	-1,098.9	695.4	835.5	0.00	0.00	0.00
4,700.0	18.72	147.67	4,489.6	319.37	-1,121.7	709.8	852.8	0.00	0.00	0.00
4,800.0	18.72	147.67	4,584.3	224.66	-1,148.8	727.0	873.4	0.00	0.00	0.00
4,900.0	18.72	147.67	4,679.1	129.95	-1,175.9	744.1	894.1	0.00	0.00	0.00
5,000.0	18.72	147.67	4,773.8	35.23	-1,203.0	761.3	914.7	0.00	0.00	0.00
SHANNON										
5,048.8	18.72	147.67	4,820.0	-11.00	-1,216.3	769.7	924.7	0.00	0.00	0.00
5,100.0	18.72	147.67	4,868.5	-59.48	-1,230.1	778.5	935.3	0.00	0.00	0.00
5,200.0	18.72	147.67	4,963.2	-154.19	-1,257.3	795.6	955.9	0.00	0.00	0.00
5,300.0	18.72	147.67	5,057.9	-248.90	-1,284.4	812.8	976.5	0.00	0.00	0.00
5,400.0	18.72	147.67	5,152.6	-343.61	-1,311.5	830.0	997.2	0.00	0.00	0.00
5,500.0	18.72	147.67	5,247.3	-438.32	-1,338.6	847.1	1,017.8	0.00	0.00	0.00
5,600.0	18.72	147.67	5,342.0	-533.03	-1,365.7	864.3	1,038.4	0.00	0.00	0.00
5,700.0	18.72	147.67	5,436.7	-627.74	-1,392.9	881.4	1,059.0	0.00	0.00	0.00
5,800.0	18.72	147.67	5,531.5	-722.45	-1,420.0	898.6	1,079.6	0.00	0.00	0.00
5,900.0	18.72	147.67	5,626.2	-817.16	-1,447.1	915.8	1,100.2	0.00	0.00	0.00
6,000.0	18.72	147.67	5,720.9	-911.87	-1,474.2	932.9	1,120.9	0.00	0.00	0.00
6,100.0	18.72	147.67	5,815.6	-1,006.58	-1,501.3	950.1	1,141.5	0.00	0.00	0.00
6,200.0	18.72	147.67	5,910.3	-1,101.29	-1,528.4	967.2	1,162.1	0.00	0.00	0.00
6,300.0	18.72	147.67	6,005.0	-1,196.00	-1,555.6	984.4	1,182.7	0.00	0.00	0.00
6,400.0	18.72	147.67	6,099.7	-1,290.71	-1,582.7	1,001.6	1,203.3	0.00	0.00	0.00
6,500.0	18.72	147.67	6,194.4	-1,385.43	-1,609.8	1,018.7	1,224.0	0.00	0.00	0.00
6,600.0	18.72	147.67	6,289.1	-1,480.14	-1,636.9	1,035.9	1,244.6	0.00	0.00	0.00
6,700.0	18.72	147.67	6,383.8	-1,574.85	-1,664.0	1,053.0	1,265.2	0.00	0.00	0.00
6,800.0	18.72	147.67	6,478.6	-1,669.56	-1,691.2	1,070.2	1,285.8	0.00	0.00	0.00
6,900.0	18.72	147.67	6,573.3	-1,764.27	-1,718.3	1,087.4	1,306.4	0.00	0.00	0.00
START BUILD & TURN										
6,966.5	18.72	147.67	6,636.3	-1,827.25	-1,736.3	1,098.8	1,320.1	0.00	0.00	0.00
7,000.0	20.65	139.52	6,667.8	-1,858.80	-1,745.3	1,105.5	1,328.0	10.00	5.75	-24.34
7,100.0	27.97	122.77	6,759.0	-1,949.98	-1,771.5	1,136.7	1,362.4	10.00	7.33	-16.75
7,200.0	36.52	112.93	6,843.5	-2,034.53	-1,795.9	1,184.0	1,412.5	10.00	8.54	-9.84
7,300.0	45.59	106.49	6,918.9	-2,109.90	-1,817.6	1,245.8	1,476.7	10.00	9.07	-6.44
SHARON SPRINGS										
7,331.0	48.46	104.90	6,940.0	-2,131.00	-1,823.8	1,267.6	1,499.1	10.00	9.27	-5.13
NIOBRARA										
7,381.6	53.19	102.58	6,972.0	-2,163.00	-1,833.1	1,305.7	1,538.1	10.00	9.35	-4.58
7,400.0	54.92	101.81	6,982.8	-2,173.79	-1,836.2	1,320.3	1,553.0	10.00	9.41	-4.19
7,500.0	64.40	98.11	7,033.3	-2,224.25	-1,851.0	1,405.2	1,639.1	10.00	9.48	-3.70
7,600.0	73.96	94.95	7,068.8	-2,259.76	-1,861.5	1,497.9	1,732.4	10.00	9.56	-3.15
7,700.0	83.56	92.09	7,088.2	-2,279.24	-1,867.5	1,595.7	1,830.1	10.00	9.60	-2.86
HZ LP: 660ft FSL & 460ft FWL of Sec 9 - NIO B TARGET										
7,767.0	90.00	90.25	7,092.0	-2,283.00	-1,868.9	1,662.6	1,896.6	10.00	9.61	-2.76
7,800.0	90.00	90.25	7,092.0	-2,283.00	-1,869.0	1,695.5	1,929.3	0.00	0.00	0.00
7,900.0	90.00	90.25	7,092.0	-2,283.00	-1,869.4	1,795.5	2,028.4	0.00	0.00	0.00
8,000.0	90.00	90.25	7,092.0	-2,283.00	-1,869.9	1,895.5	2,127.6	0.00	0.00	0.00
8,100.0	90.00	90.25	7,092.0	-2,283.00	-1,870.3	1,995.5	2,226.8	0.00	0.00	0.00
8,200.0	90.00	90.25	7,092.0	-2,283.00	-1,870.7	2,095.5	2,325.9	0.00	0.00	0.00
8,300.0	90.00	90.25	7,092.0	-2,283.00	-1,871.1	2,195.5	2,425.1	0.00	0.00	0.00
8,400.0	90.00	90.25	7,092.0	-2,283.00	-1,871.6	2,295.5	2,524.3	0.00	0.00	0.00
8,500.0	90.00	90.25	7,092.0	-2,283.00	-1,872.0	2,395.5	2,623.4	0.00	0.00	0.00
8,600.0	90.00	90.25	7,092.0	-2,283.00	-1,872.4	2,495.5	2,722.6	0.00	0.00	0.00
8,700.0	90.00	90.25	7,092.0	-2,283.00	-1,872.9	2,595.5	2,821.8	0.00	0.00	0.00
8,800.0	90.00	90.25	7,092.0	-2,283.00	-1,873.3	2,695.5	2,920.9	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well TC-HILAND KNOLLS 4-9-11
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4809.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	North Reference:	True
Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,900.0	90.00	90.25	7,092.0	-2,283.00	-1,873.7	2,795.5	3,020.1	0.00	0.00	0.00
9,000.0	90.00	90.25	7,092.0	-2,283.00	-1,874.1	2,895.5	3,119.3	0.00	0.00	0.00
9,100.0	90.00	90.25	7,092.0	-2,283.00	-1,874.6	2,995.5	3,218.4	0.00	0.00	0.00
9,200.0	90.00	90.25	7,092.0	-2,283.00	-1,875.0	3,095.5	3,317.6	0.00	0.00	0.00
9,300.0	90.00	90.25	7,092.0	-2,283.00	-1,875.4	3,195.5	3,416.8	0.00	0.00	0.00
9,400.0	90.00	90.25	7,092.0	-2,283.00	-1,875.9	3,295.5	3,515.9	0.00	0.00	0.00
9,500.0	90.00	90.25	7,092.0	-2,283.00	-1,876.3	3,395.5	3,615.1	0.00	0.00	0.00
9,600.0	90.00	90.25	7,092.0	-2,283.00	-1,876.7	3,495.5	3,714.3	0.00	0.00	0.00
9,700.0	90.00	90.25	7,092.0	-2,283.00	-1,877.1	3,595.5	3,813.4	0.00	0.00	0.00
9,800.0	90.00	90.25	7,092.0	-2,283.00	-1,877.6	3,695.5	3,912.6	0.00	0.00	0.00
9,900.0	90.00	90.25	7,092.0	-2,283.00	-1,878.0	3,795.5	4,011.8	0.00	0.00	0.00
10,000.0	90.00	90.25	7,092.0	-2,283.00	-1,878.4	3,895.5	4,110.9	0.00	0.00	0.00
10,100.0	90.00	90.25	7,092.0	-2,283.00	-1,878.8	3,995.5	4,210.1	0.00	0.00	0.00
10,200.0	90.00	90.25	7,092.0	-2,283.00	-1,879.3	4,095.5	4,309.3	0.00	0.00	0.00
10,300.0	90.00	90.25	7,092.0	-2,283.00	-1,879.7	4,195.5	4,408.4	0.00	0.00	0.00
10,400.0	90.00	90.25	7,092.0	-2,283.00	-1,880.1	4,295.5	4,507.6	0.00	0.00	0.00
10,500.0	90.00	90.25	7,092.0	-2,283.00	-1,880.6	4,395.5	4,606.8	0.00	0.00	0.00
10,600.0	90.00	90.25	7,092.0	-2,283.00	-1,881.0	4,495.5	4,705.9	0.00	0.00	0.00
10,700.0	90.00	90.25	7,092.0	-2,283.00	-1,881.4	4,595.5	4,805.1	0.00	0.00	0.00
10,800.0	90.00	90.25	7,092.0	-2,283.00	-1,881.8	4,695.5	4,904.2	0.00	0.00	0.00
10,900.0	90.00	90.25	7,092.0	-2,283.00	-1,882.3	4,795.5	5,003.4	0.00	0.00	0.00
11,000.0	90.00	90.25	7,092.0	-2,283.00	-1,882.7	4,895.5	5,102.6	0.00	0.00	0.00
11,100.0	90.00	90.25	7,092.0	-2,283.00	-1,883.1	4,995.5	5,201.7	0.00	0.00	0.00
11,200.0	90.00	90.25	7,092.0	-2,283.00	-1,883.6	5,095.5	5,300.9	0.00	0.00	0.00
11,300.0	90.00	90.25	7,092.0	-2,283.00	-1,884.0	5,195.5	5,400.1	0.00	0.00	0.00
11,400.0	90.00	90.25	7,092.0	-2,283.00	-1,884.4	5,295.5	5,499.2	0.00	0.00	0.00
11,500.0	90.00	90.25	7,092.0	-2,283.00	-1,884.8	5,395.5	5,598.4	0.00	0.00	0.00
11,600.0	90.00	90.25	7,092.0	-2,283.00	-1,885.3	5,495.5	5,697.6	0.00	0.00	0.00
11,700.0	90.00	90.25	7,092.0	-2,283.00	-1,885.7	5,595.5	5,796.7	0.00	0.00	0.00
11,800.0	90.00	90.25	7,092.0	-2,283.00	-1,886.1	5,695.5	5,895.9	0.00	0.00	0.00
11,900.0	90.00	90.25	7,092.0	-2,283.00	-1,886.6	5,795.5	5,995.1	0.00	0.00	0.00
12,000.0	90.00	90.25	7,092.0	-2,283.00	-1,887.0	5,895.5	6,094.2	0.00	0.00	0.00
12,100.0	90.00	90.25	7,092.0	-2,283.00	-1,887.4	5,995.5	6,193.4	0.00	0.00	0.00
12,200.0	90.00	90.25	7,092.0	-2,283.00	-1,887.8	6,095.5	6,292.6	0.00	0.00	0.00
12,300.0	90.00	90.25	7,092.0	-2,283.00	-1,888.3	6,195.5	6,391.7	0.00	0.00	0.00
12,400.0	90.00	90.25	7,092.0	-2,283.00	-1,888.7	6,295.5	6,490.9	0.00	0.00	0.00
12,500.0	90.00	90.25	7,092.0	-2,283.00	-1,889.1	6,395.5	6,590.1	0.00	0.00	0.00
12,600.0	90.00	90.25	7,092.0	-2,283.00	-1,889.6	6,495.5	6,689.2	0.00	0.00	0.00
12,700.0	90.00	90.25	7,092.0	-2,283.00	-1,890.0	6,595.5	6,788.4	0.00	0.00	0.00
12,800.0	90.00	90.25	7,092.0	-2,283.00	-1,890.4	6,695.5	6,887.6	0.00	0.00	0.00
12,900.0	90.00	90.25	7,092.0	-2,283.00	-1,890.8	6,795.5	6,986.7	0.00	0.00	0.00
13,000.0	90.00	90.25	7,092.0	-2,283.00	-1,891.3	6,895.5	7,085.9	0.00	0.00	0.00
13,100.0	90.00	90.25	7,092.0	-2,283.00	-1,891.7	6,995.5	7,185.1	0.00	0.00	0.00
13,200.0	90.00	90.25	7,092.0	-2,283.00	-1,892.1	7,095.5	7,284.2	0.00	0.00	0.00
13,300.0	90.00	90.25	7,092.0	-2,283.00	-1,892.6	7,195.5	7,383.4	0.00	0.00	0.00
13,400.0	90.00	90.25	7,092.0	-2,283.00	-1,893.0	7,295.5	7,482.6	0.00	0.00	0.00
13,500.0	90.00	90.25	7,092.0	-2,283.00	-1,893.4	7,395.5	7,581.7	0.00	0.00	0.00
13,600.0	90.00	90.25	7,092.0	-2,283.00	-1,893.8	7,495.5	7,680.9	0.00	0.00	0.00
13,700.0	90.00	90.25	7,092.0	-2,283.00	-1,894.3	7,595.5	7,780.1	0.00	0.00	0.00
13,800.0	90.00	90.25	7,092.0	-2,283.00	-1,894.7	7,695.5	7,879.2	0.00	0.00	0.00
13,900.0	90.00	90.25	7,092.0	-2,283.00	-1,895.1	7,795.5	7,978.4	0.00	0.00	0.00
14,000.0	90.00	90.25	7,092.0	-2,283.00	-1,895.6	7,895.5	8,077.6	0.00	0.00	0.00
14,100.0	90.00	90.25	7,092.0	-2,283.00	-1,896.0	7,995.5	8,176.7	0.00	0.00	0.00
14,200.0	90.00	90.25	7,092.0	-2,283.00	-1,896.4	8,095.5	8,275.9	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well TC-HILAND KNOLLS 4-9-11
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4809.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	North Reference:	True
Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,300.0	90.00	90.25	7,092.0	-2,283.00	-1,896.8	8,195.5	8,375.1	0.00	0.00	0.00
14,400.0	90.00	90.25	7,092.0	-2,283.00	-1,897.3	8,295.5	8,474.2	0.00	0.00	0.00
14,500.0	90.00	90.25	7,092.0	-2,283.00	-1,897.7	8,395.5	8,573.4	0.00	0.00	0.00
14,600.0	90.00	90.25	7,092.0	-2,283.00	-1,898.1	8,495.5	8,672.6	0.00	0.00	0.00
14,700.0	90.00	90.25	7,092.0	-2,283.00	-1,898.5	8,595.5	8,771.7	0.00	0.00	0.00
14,800.0	90.00	90.25	7,092.0	-2,283.00	-1,899.0	8,695.5	8,870.9	0.00	0.00	0.00
14,900.0	90.00	90.25	7,092.0	-2,283.00	-1,899.4	8,795.5	8,970.1	0.00	0.00	0.00
15,000.0	90.00	90.25	7,092.0	-2,283.00	-1,899.8	8,895.5	9,069.2	0.00	0.00	0.00
15,100.0	90.00	90.25	7,092.0	-2,283.00	-1,900.3	8,995.5	9,168.4	0.00	0.00	0.00
15,200.0	90.00	90.25	7,092.0	-2,283.00	-1,900.7	9,095.5	9,267.6	0.00	0.00	0.00
15,300.0	90.00	90.25	7,092.0	-2,283.00	-1,901.1	9,195.5	9,366.7	0.00	0.00	0.00
15,400.0	90.00	90.25	7,092.0	-2,283.00	-1,901.5	9,295.5	9,465.9	0.00	0.00	0.00
15,500.0	90.00	90.25	7,092.0	-2,283.00	-1,902.0	9,395.5	9,565.1	0.00	0.00	0.00
15,600.0	90.00	90.25	7,092.0	-2,283.00	-1,902.4	9,495.5	9,664.2	0.00	0.00	0.00
15,700.0	90.00	90.25	7,092.0	-2,283.00	-1,902.8	9,595.5	9,763.4	0.00	0.00	0.00
15,800.0	90.00	90.25	7,092.0	-2,283.00	-1,903.3	9,695.5	9,862.6	0.00	0.00	0.00
15,900.0	90.00	90.25	7,092.0	-2,283.00	-1,903.7	9,795.5	9,961.7	0.00	0.00	0.00
16,000.0	90.00	90.25	7,092.0	-2,283.00	-1,904.1	9,895.5	10,060.9	0.00	0.00	0.00
16,100.0	90.00	90.25	7,092.0	-2,283.00	-1,904.5	9,995.5	10,160.0	0.00	0.00	0.00
16,200.0	90.00	90.25	7,092.0	-2,283.00	-1,905.0	10,095.5	10,259.2	0.00	0.00	0.00
16,300.0	90.00	90.25	7,092.0	-2,283.00	-1,905.4	10,195.5	10,358.4	0.00	0.00	0.00
16,400.0	90.00	90.25	7,092.0	-2,283.00	-1,905.8	10,295.5	10,457.5	0.00	0.00	0.00
16,500.0	90.00	90.25	7,092.0	-2,283.00	-1,906.3	10,395.5	10,556.7	0.00	0.00	0.00
16,600.0	90.00	90.25	7,092.0	-2,283.00	-1,906.7	10,495.5	10,655.9	0.00	0.00	0.00
16,700.0	90.00	90.25	7,092.0	-2,283.00	-1,907.1	10,595.5	10,755.0	0.00	0.00	0.00
16,800.0	90.00	90.25	7,092.0	-2,283.00	-1,907.5	10,695.5	10,854.2	0.00	0.00	0.00
16,900.0	90.00	90.25	7,092.0	-2,283.00	-1,908.0	10,795.5	10,953.4	0.00	0.00	0.00
17,000.0	90.00	90.25	7,092.0	-2,283.00	-1,908.4	10,895.5	11,052.5	0.00	0.00	0.00
17,100.0	90.00	90.25	7,092.0	-2,283.00	-1,908.8	10,995.5	11,151.7	0.00	0.00	0.00
17,200.0	90.00	90.25	7,092.0	-2,283.00	-1,909.3	11,095.5	11,250.9	0.00	0.00	0.00
17,300.0	90.00	90.25	7,092.0	-2,283.00	-1,909.7	11,195.5	11,350.0	0.00	0.00	0.00
17,400.0	90.00	90.25	7,092.0	-2,283.00	-1,910.1	11,295.5	11,449.2	0.00	0.00	0.00
17,500.0	90.00	90.25	7,092.0	-2,283.00	-1,910.5	11,395.5	11,548.4	0.00	0.00	0.00
17,600.0	90.00	90.25	7,092.0	-2,283.00	-1,911.0	11,495.5	11,647.5	0.00	0.00	0.00
17,700.0	90.00	90.25	7,092.0	-2,283.00	-1,911.4	11,595.5	11,746.7	0.00	0.00	0.00
17,800.0	90.00	90.25	7,092.0	-2,283.00	-1,911.8	11,695.5	11,845.9	0.00	0.00	0.00
17,900.0	90.00	90.25	7,092.0	-2,283.00	-1,912.3	11,795.5	11,945.0	0.00	0.00	0.00
18,000.0	90.00	90.25	7,092.0	-2,283.00	-1,912.7	11,895.5	12,044.2	0.00	0.00	0.00
18,100.0	90.00	90.25	7,092.0	-2,283.00	-1,913.1	11,995.5	12,143.4	0.00	0.00	0.00
18,200.0	90.00	90.25	7,092.0	-2,283.00	-1,913.5	12,095.5	12,242.5	0.00	0.00	0.00
18,300.0	90.00	90.25	7,092.0	-2,283.00	-1,914.0	12,195.5	12,341.7	0.00	0.00	0.00
18,400.0	90.00	90.25	7,092.0	-2,283.00	-1,914.4	12,295.5	12,440.9	0.00	0.00	0.00
18,500.0	90.00	90.25	7,092.0	-2,283.00	-1,914.8	12,395.5	12,540.0	0.00	0.00	0.00
18,600.0	90.00	90.25	7,092.0	-2,283.00	-1,915.3	12,495.5	12,639.2	0.00	0.00	0.00
18,700.0	90.00	90.25	7,092.0	-2,283.00	-1,915.7	12,595.5	12,738.4	0.00	0.00	0.00
18,800.0	90.00	90.25	7,092.0	-2,283.00	-1,916.1	12,695.5	12,837.5	0.00	0.00	0.00
18,900.0	90.00	90.25	7,092.0	-2,283.00	-1,916.5	12,795.5	12,936.7	0.00	0.00	0.00
19,000.0	90.00	90.25	7,092.0	-2,283.00	-1,917.0	12,895.5	13,035.9	0.00	0.00	0.00
19,100.0	90.00	90.25	7,092.0	-2,283.00	-1,917.4	12,995.5	13,135.0	0.00	0.00	0.00
19,200.0	90.00	90.25	7,092.0	-2,283.00	-1,917.8	13,095.5	13,234.2	0.00	0.00	0.00
19,300.0	90.00	90.25	7,092.0	-2,283.00	-1,918.2	13,195.5	13,333.4	0.00	0.00	0.00
19,400.0	90.00	90.25	7,092.0	-2,283.00	-1,918.7	13,295.5	13,432.5	0.00	0.00	0.00
19,500.0	90.00	90.25	7,092.0	-2,283.00	-1,919.1	13,395.5	13,531.7	0.00	0.00	0.00
19,600.0	90.00	90.25	7,092.0	-2,283.00	-1,919.5	13,495.5	13,630.9	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well TC-HILAND KNOLLS 4-9-11
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4809.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4809.0usft
Site:	NE SE SEC. 8 T5N R66W 6th P.M.	North Reference:	True
Well:	TC-HILAND KNOLLS 4-9-11	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,700.0	90.00	90.25	7,092.0	-2,283.00	-1,920.0	13,595.4	13,730.0	0.00	0.00	0.00
19,800.0	90.00	90.25	7,092.0	-2,283.00	-1,920.4	13,695.4	13,829.2	0.00	0.00	0.00
19,900.0	90.00	90.25	7,092.0	-2,283.00	-1,920.8	13,795.4	13,928.4	0.00	0.00	0.00
20,000.0	90.00	90.25	7,092.0	-2,283.00	-1,921.2	13,895.4	14,027.5	0.00	0.00	0.00
20,100.0	90.00	90.25	7,092.0	-2,283.00	-1,921.7	13,995.4	14,126.7	0.00	0.00	0.00
20,200.0	90.00	90.25	7,092.0	-2,283.00	-1,922.1	14,095.4	14,225.9	0.00	0.00	0.00
20,300.0	90.00	90.25	7,092.0	-2,283.00	-1,922.5	14,195.4	14,325.0	0.00	0.00	0.00
20,400.0	90.00	90.25	7,092.0	-2,283.00	-1,923.0	14,295.4	14,424.2	0.00	0.00	0.00
BHL: 660ft FSL & 2519ft FWL of Sec 11										
20,421.5	90.00	90.25	7,092.0	-2,283.00	-1,923.1	14,316.9	14,445.5	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,845.2	3,680.0	PARKMAN				
4,615.9	4,410.0	SUSSEX				
5,048.8	4,820.0	SHANNON				
7,331.0	6,940.0	SHARON SPRINGS				
7,381.6	6,972.0	NIOBRARA				
7,767.0	7,092.0	NIO B TARGET				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 2536ft FSL & 1188ft FEL of Sec 8
100.0	100.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,035.9	1,019.3	-128.0	81.0	EOB TO 18.72° INC
6,966.5	6,636.3	-1,736.3	1,098.8	START BUILD & TURN
7,767.0	7,092.0	-1,868.9	1,662.6	HZ LP: 660ft FSL & 460ft FWL of Sec 9
20,421.5	7,092.0	-1,923.1	14,316.9	BHL: 660ft FSL & 2519ft FWL of Sec 11