

# **EXTRACTION OIL & GAS**

**WELD COUNTY, COLORADO (NAD 83)**

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

**TC-HILAND KNOLLS 1-9-11**

**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 1-9-11  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

ANNOTATIONS										FORMATION TOP DETAILS		
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation		TVDPath	MDPath	Formation
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 2584ft FSL & 1189ft FEL of Sec 8		3680.0	3757.5	PARKMAN
400.0	400.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)		4410.0	4507.4	SUSSEX
1055.8	1061.7	13.23	128.11	-47.0	59.9	62.9	76.1	EOB TO 13.23° INC		4820.0	4928.6	SHANNON
6627.4	6785.3	13.23	128.11	-855.7	1090.9	1147.0	1386.5	START BUILD & TURN		6940.0	7151.7	SHARON SPRINGS
7092.0	7581.2	90.00	90.26	-925.3	1654.2	1713.7	1958.0	HZ LP: 1650ft FSL & 460ft FWL of Sec 9		6972.0	7201.5	NIOBRARA
7092.0	20229.6	90.00	90.26	-983.1	14302.4	14336.2	14606.4	BHL: 1649ft FSL & 2505ft FWL of Sec 11		7092.0	7581.2	NIO B TARGET

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
LANDING PNT - TC-HILAND KNOLLS 1-9-11	7092.0	-925.3	1654.1	40.411400	-104.792720
BHL - TC-HILAND KNOLLS 1-9-11	7092.0	-983.1	14302.5	40.411230	-104.747300

TC-MOISER HILL 2-9-7

TC-COUNTRY CLUB WEST C1-9-11

TC-MOISER HILL 3-9-11

TC-COUNTRY CLUB WEST 1-9-11

TC-COUNTRY CLUB WEST 2-9-11

TC-COUNTRY CLUB WEST C3-9-11

TC-COUNTRY CLUB WEST A2-9-11

TC-COUNTRY CLUB WEST 3-9-11

TC-AIMS C4-9-11

TC-COUNTRY CLUB WEST 4-9-11

TC-COUNTRY CLUB WEST 5-9-11

TC-AIMS C5-9-11

TC-AIMS 1-9-11

TC-AIMS 2-9-11

TC-HILAND KNOLLS C6-9-11

TC-AIMS 3-9-11

TC-AIMS 4-9-11

TC-HILAND KNOLLS C7-9-11

TC-HILAND KNOLLS 1-9-11

TC-HILAND KNOLLS 2-9-11

TC-HILAND KNOLLS 3-9-11

TC-HILAND KNOLLS 4-9-11

PROPOSED LOCAL COORDINATES

SHL: 2584ft FSL & 1189ft FEL of Sec 8

HZ LP: 1650ft FSL & 460ft FWL of Sec 9

BHL: 1649ft FSL & 2505ft FWL of Sec 11

T

M

Azimuths to True North

Magnetic North: 8.28°

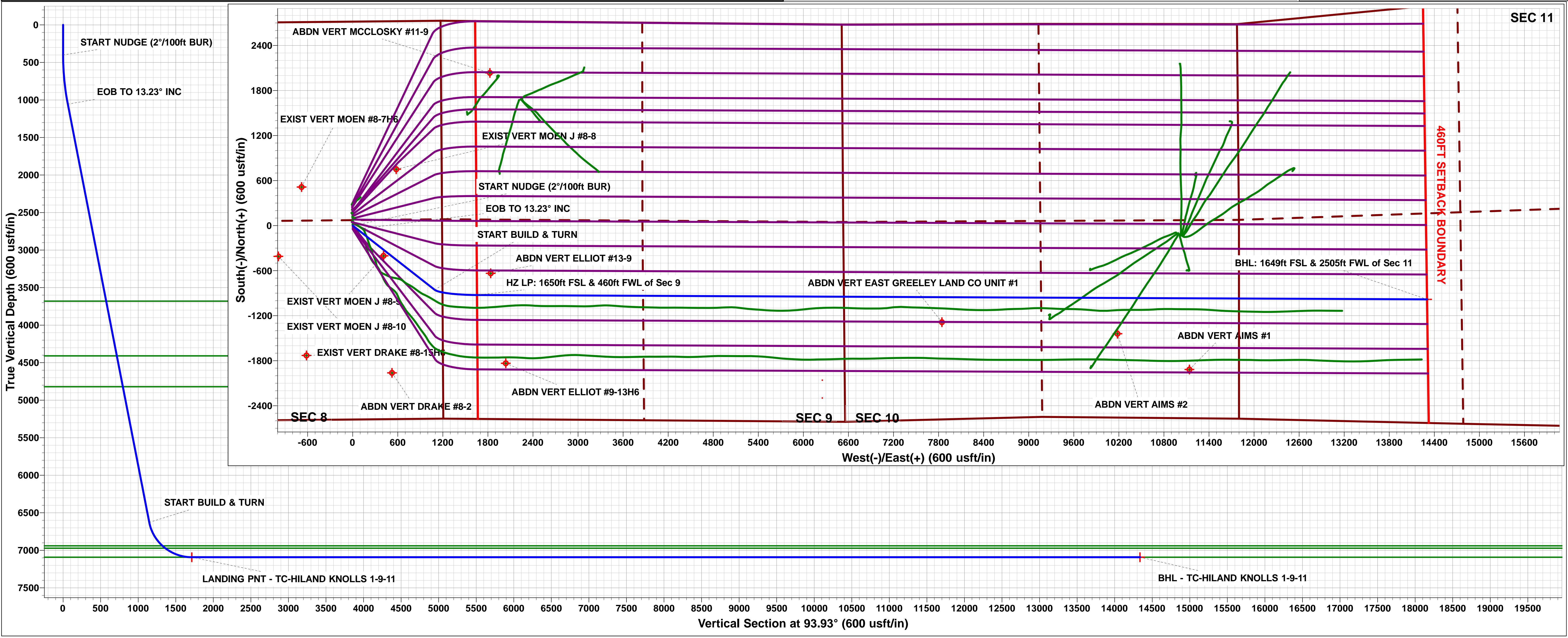
Magnetic Field

Strength: 52449.7snT

Dip Angle: 66.87°

Date: 28/12/2016

Model: IGRF2015



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

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

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

Well	TC-HILAND KNOLLS 1-9-11					
Well Position	+N/-S	47.3 usft	Northing:	1,394,410.97 usfi	Latitude:	40.413940
	+E/-W	0.0 usft	Easting:	3,195,288.25 usfi	Longitude:	-104.798660
Position Uncertainty		0.0 usft	Wellhead Elevation:	usfi	Ground Level:	4,792.0 usft

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

<b>Design</b>	PROPOSAL #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	93.93	

<b>Plan Sections</b>											
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	-4,808.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	-4,408.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,061.7	13.23	128.11	1,055.9	-3,752.1	-47.0	59.9	2.00	2.00	0.00	128.11	
6,785.3	13.23	128.11	6,627.4	1,819.4	-855.7	1,090.9	0.00	0.00	0.00	0.00	
7,581.2	90.00	90.26	7,092.0	2,284.0	-925.3	1,654.1	10.00	9.65	-4.76	-38.60	LANDING PNT - TC
20,229.6	90.00	90.26	7,092.0	2,284.0	-983.1	14,302.5	0.00	0.00	0.00	0.00	BHL - TC-HILAND I

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
<b>SHL: 2584ft FSL &amp; 1189ft FEL of Sec 8</b>										
0.0	0.00	0.00	0.0	4,808.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,708.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,608.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,508.00	0.0	0.0	0.0	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
400.0	0.00	0.00	400.0	4,408.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	2.00	128.11	500.0	4,308.02	-1.1	1.4	1.4	2.00	2.00	0.00
600.0	4.00	128.11	599.8	4,208.16	-4.3	5.5	5.8	2.00	2.00	0.00
700.0	6.00	128.11	699.5	4,108.55	-9.7	12.3	13.0	2.00	2.00	0.00
800.0	8.00	128.11	798.7	4,009.30	-17.2	21.9	23.1	2.00	2.00	0.00
900.0	10.00	128.11	897.5	3,910.53	-26.9	34.2	36.0	2.00	2.00	0.00
1,000.0	12.00	128.11	995.6	3,812.38	-38.6	49.3	51.8	2.00	2.00	0.00
<b>EOB TO 13.23° INC</b>										
1,061.7	13.23	128.11	1,055.8	3,752.17	-47.0	59.9	62.9	2.00	2.00	0.00
1,100.0	13.23	128.11	1,093.1	3,714.89	-52.4	66.8	70.2	0.00	0.00	0.00
1,200.0	13.23	128.11	1,190.5	3,617.54	-66.5	84.8	89.1	0.00	0.00	0.00
1,300.0	13.23	128.11	1,287.8	3,520.20	-80.6	102.8	108.1	0.00	0.00	0.00
1,400.0	13.23	128.11	1,385.1	3,422.85	-94.8	120.8	127.0	0.00	0.00	0.00
1,500.0	13.23	128.11	1,482.5	3,325.51	-108.9	138.8	146.0	0.00	0.00	0.00
1,600.0	13.23	128.11	1,579.8	3,228.17	-123.0	156.8	164.9	0.00	0.00	0.00
1,700.0	13.23	128.11	1,677.2	3,130.82	-137.1	174.8	183.8	0.00	0.00	0.00
1,800.0	13.23	128.11	1,774.5	3,033.48	-151.3	192.9	202.8	0.00	0.00	0.00
1,900.0	13.23	128.11	1,871.9	2,936.13	-165.4	210.9	221.7	0.00	0.00	0.00
2,000.0	13.23	128.11	1,969.2	2,838.79	-179.5	228.9	240.7	0.00	0.00	0.00
2,100.0	13.23	128.11	2,066.6	2,741.45	-193.7	246.9	259.6	0.00	0.00	0.00
2,200.0	13.23	128.11	2,163.9	2,644.10	-207.8	264.9	278.5	0.00	0.00	0.00
2,300.0	13.23	128.11	2,261.2	2,546.76	-221.9	282.9	297.5	0.00	0.00	0.00
2,400.0	13.23	128.11	2,358.6	2,449.41	-236.0	300.9	316.4	0.00	0.00	0.00
2,500.0	13.23	128.11	2,455.9	2,352.07	-250.2	319.0	335.4	0.00	0.00	0.00
2,600.0	13.23	128.11	2,553.3	2,254.73	-264.3	337.0	354.3	0.00	0.00	0.00
2,700.0	13.23	128.11	2,650.6	2,157.38	-278.4	355.0	373.2	0.00	0.00	0.00
2,800.0	13.23	128.11	2,748.0	2,060.04	-292.6	373.0	392.2	0.00	0.00	0.00
2,900.0	13.23	128.11	2,845.3	1,962.69	-306.7	391.0	411.1	0.00	0.00	0.00
3,000.0	13.23	128.11	2,942.6	1,865.35	-320.8	409.0	430.1	0.00	0.00	0.00
3,100.0	13.23	128.11	3,040.0	1,768.01	-335.0	427.0	449.0	0.00	0.00	0.00
3,200.0	13.23	128.11	3,137.3	1,670.66	-349.1	445.1	468.0	0.00	0.00	0.00
3,300.0	13.23	128.11	3,234.7	1,573.32	-363.2	463.1	486.9	0.00	0.00	0.00
3,400.0	13.23	128.11	3,332.0	1,475.97	-377.3	481.1	505.8	0.00	0.00	0.00
3,500.0	13.23	128.11	3,429.4	1,378.63	-391.5	499.1	524.8	0.00	0.00	0.00
3,600.0	13.23	128.11	3,526.7	1,281.29	-405.6	517.1	543.7	0.00	0.00	0.00
3,700.0	13.23	128.11	3,624.1	1,183.94	-419.7	535.1	562.7	0.00	0.00	0.00
<b>PARKMAN</b>										
3,757.5	13.23	128.11	3,680.0	1,128.00	-427.9	545.5	573.5	0.00	0.00	0.00
3,800.0	13.23	128.11	3,721.4	1,086.60	-433.9	553.1	581.6	0.00	0.00	0.00
3,900.0	13.23	128.11	3,818.7	989.25	-448.0	571.2	600.5	0.00	0.00	0.00
4,000.0	13.23	128.11	3,916.1	891.91	-462.1	589.2	619.5	0.00	0.00	0.00
4,100.0	13.23	128.11	4,013.4	794.57	-476.2	607.2	638.4	0.00	0.00	0.00
4,200.0	13.23	128.11	4,110.8	697.22	-490.4	625.2	657.4	0.00	0.00	0.00
4,300.0	13.23	128.11	4,208.1	599.88	-504.5	643.2	676.3	0.00	0.00	0.00
4,400.0	13.23	128.11	4,305.5	502.54	-518.6	661.2	695.2	0.00	0.00	0.00
4,500.0	13.23	128.11	4,402.8	405.19	-532.8	679.2	714.2	0.00	0.00	0.00
<b>SUSSEX</b>										
4,507.4	13.23	128.11	4,410.0	398.00	-533.8	680.6	715.6	0.00	0.00	0.00



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
4,600.0	13.23	128.11	4,500.2	307.85	-546.9	697.3	733.1	0.00	0.00	0.00
4,700.0	13.23	128.11	4,597.5	210.50	-561.0	715.3	752.1	0.00	0.00	0.00
4,800.0	13.23	128.11	4,694.8	113.16	-575.2	733.3	771.0	0.00	0.00	0.00
4,900.0	13.23	128.11	4,792.2	15.82	-589.3	751.3	789.9	0.00	0.00	0.00
<b>SHANNON</b>										
<b>4,928.6</b>	<b>13.23</b>	<b>128.11</b>	<b>4,820.0</b>	<b>-12.00</b>	<b>-593.3</b>	<b>756.5</b>	<b>795.4</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,000.0	13.23	128.11	4,889.5	-81.53	-603.4	769.3	808.9	0.00	0.00	0.00
5,100.0	13.23	128.11	4,986.9	-178.87	-617.5	787.3	827.8	0.00	0.00	0.00
5,200.0	13.23	128.11	5,084.2	-276.22	-631.7	805.3	846.8	0.00	0.00	0.00
5,300.0	13.23	128.11	5,181.6	-373.56	-645.8	823.4	865.7	0.00	0.00	0.00
5,400.0	13.23	128.11	5,278.9	-470.90	-659.9	841.4	884.7	0.00	0.00	0.00
5,500.0	13.23	128.11	5,376.2	-568.25	-674.1	859.4	903.6	0.00	0.00	0.00
5,600.0	13.23	128.11	5,473.6	-665.59	-688.2	877.4	922.5	0.00	0.00	0.00
5,700.0	13.23	128.11	5,570.9	-762.94	-702.3	895.4	941.5	0.00	0.00	0.00
5,800.0	13.23	128.11	5,668.3	-860.28	-716.4	913.4	960.4	0.00	0.00	0.00
5,900.0	13.23	128.11	5,765.6	-957.62	-730.6	931.4	979.4	0.00	0.00	0.00
6,000.0	13.23	128.11	5,863.0	-1,054.97	-744.7	949.5	998.3	0.00	0.00	0.00
6,100.0	13.23	128.11	5,960.3	-1,152.31	-758.8	967.5	1,017.2	0.00	0.00	0.00
6,200.0	13.23	128.11	6,057.7	-1,249.66	-773.0	985.5	1,036.2	0.00	0.00	0.00
6,300.0	13.23	128.11	6,155.0	-1,347.00	-787.1	1,003.5	1,055.1	0.00	0.00	0.00
6,400.0	13.23	128.11	6,252.3	-1,444.34	-801.2	1,021.5	1,074.1	0.00	0.00	0.00
6,500.0	13.23	128.11	6,349.7	-1,541.69	-815.4	1,039.5	1,093.0	0.00	0.00	0.00
6,600.0	13.23	128.11	6,447.0	-1,639.03	-829.5	1,057.5	1,111.9	0.00	0.00	0.00
6,700.0	13.23	128.11	6,544.4	-1,736.38	-843.6	1,075.6	1,130.9	0.00	0.00	0.00
<b>START BUILD &amp; TURN</b>										
<b>6,785.3</b>	<b>13.23</b>	<b>128.11</b>	<b>6,627.4</b>	<b>-1,819.41</b>	<b>-855.7</b>	<b>1,090.9</b>	<b>1,147.0</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,800.0	14.41	124.43	6,641.7	-1,833.68	-857.7	1,093.8	1,150.0	9.98	7.99	-25.03
6,900.0	23.30	109.84	6,736.3	-1,928.27	-871.5	1,122.7	1,179.8	10.00	8.89	-14.59
7,000.0	32.81	103.19	6,824.4	-2,016.44	-884.5	1,167.8	1,225.7	10.00	9.51	-6.64
7,100.0	42.53	99.31	6,903.5	-2,095.51	-896.1	1,227.7	1,286.3	10.00	9.72	-3.88
<b>SHARON SPRINGS</b>										
<b>7,151.7</b>	<b>47.60</b>	<b>97.83</b>	<b>6,940.0</b>	<b>-2,132.00</b>	<b>-901.6</b>	<b>1,263.9</b>	<b>1,322.7</b>	<b>10.00</b>	<b>9.79</b>	<b>-2.86</b>
7,200.0	52.34	96.66	6,971.1	-2,163.07	-906.2	1,300.6	1,359.6	10.00	9.82	-2.44
<b>NIOBRARA</b>										
<b>7,201.5</b>	<b>52.49</b>	<b>96.62</b>	<b>6,972.0</b>	<b>-2,164.00</b>	<b>-906.4</b>	<b>1,301.8</b>	<b>1,360.8</b>	<b>10.00</b>	<b>9.84</b>	<b>-2.27</b>
7,300.0	62.20	94.63	7,025.1	-2,217.08	-914.4	1,384.2	1,443.6	10.00	9.85	-2.03
7,400.0	72.07	92.94	7,063.9	-2,255.89	-920.4	1,476.0	1,535.6	10.00	9.88	-1.69
7,500.0	81.97	91.43	7,086.3	-2,278.32	-924.1	1,573.2	1,632.9	10.00	9.89	-1.51
<b>HZ LP: 1650ft FSL &amp; 460ft FWL of Sec 9 - NIO B TARGET</b>										
<b>7,581.2</b>	<b>90.00</b>	<b>90.26</b>	<b>7,092.0</b>	<b>-2,284.00</b>	<b>-925.3</b>	<b>1,654.1</b>	<b>1,713.7</b>	<b>10.00</b>	<b>9.90</b>	<b>-1.44</b>
7,600.0	90.00	90.26	7,092.0	-2,284.00	-925.4	1,673.0	1,732.5	0.00	0.00	0.00
7,700.0	90.00	90.26	7,092.0	-2,284.00	-925.8	1,773.0	1,832.3	0.00	0.00	0.00
7,800.0	90.00	90.26	7,092.0	-2,284.00	-926.3	1,873.0	1,932.1	0.00	0.00	0.00
7,900.0	90.00	90.26	7,092.0	-2,284.00	-926.7	1,973.0	2,031.9	0.00	0.00	0.00
8,000.0	90.00	90.26	7,092.0	-2,284.00	-927.2	2,073.0	2,131.7	0.00	0.00	0.00
8,100.0	90.00	90.26	7,092.0	-2,284.00	-927.7	2,173.0	2,231.5	0.00	0.00	0.00
8,200.0	90.00	90.26	7,092.0	-2,284.00	-928.1	2,273.0	2,331.3	0.00	0.00	0.00
8,300.0	90.00	90.26	7,092.0	-2,284.00	-928.6	2,373.0	2,431.1	0.00	0.00	0.00
8,400.0	90.00	90.26	7,092.0	-2,284.00	-929.0	2,473.0	2,530.8	0.00	0.00	0.00
8,500.0	90.00	90.26	7,092.0	-2,284.00	-929.5	2,573.0	2,630.6	0.00	0.00	0.00
8,600.0	90.00	90.26	7,092.0	-2,284.00	-929.9	2,673.0	2,730.4	0.00	0.00	0.00
8,700.0	90.00	90.26	7,092.0	-2,284.00	-930.4	2,773.0	2,830.2	0.00	0.00	0.00
8,800.0	90.00	90.26	7,092.0	-2,284.00	-930.9	2,873.0	2,930.0	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	90.26	7,092.0	-2,284.00	-931.3	2,973.0	3,029.8	0.00	0.00	0.00
9,000.0	90.00	90.26	7,092.0	-2,284.00	-931.8	3,073.0	3,129.6	0.00	0.00	0.00
9,100.0	90.00	90.26	7,092.0	-2,284.00	-932.2	3,172.9	3,229.4	0.00	0.00	0.00
9,200.0	90.00	90.26	7,092.0	-2,284.00	-932.7	3,272.9	3,329.2	0.00	0.00	0.00
9,300.0	90.00	90.26	7,092.0	-2,284.00	-933.1	3,372.9	3,429.0	0.00	0.00	0.00
9,400.0	90.00	90.26	7,092.0	-2,284.00	-933.6	3,472.9	3,528.8	0.00	0.00	0.00
9,500.0	90.00	90.26	7,092.0	-2,284.00	-934.1	3,572.9	3,628.6	0.00	0.00	0.00
9,600.0	90.00	90.26	7,092.0	-2,284.00	-934.5	3,672.9	3,728.4	0.00	0.00	0.00
9,700.0	90.00	90.26	7,092.0	-2,284.00	-935.0	3,772.9	3,828.2	0.00	0.00	0.00
9,800.0	90.00	90.26	7,092.0	-2,284.00	-935.4	3,872.9	3,928.0	0.00	0.00	0.00
9,900.0	90.00	90.26	7,092.0	-2,284.00	-935.9	3,972.9	4,027.8	0.00	0.00	0.00
10,000.0	90.00	90.26	7,092.0	-2,284.00	-936.3	4,072.9	4,127.6	0.00	0.00	0.00
10,100.0	90.00	90.26	7,092.0	-2,284.00	-936.8	4,172.9	4,227.4	0.00	0.00	0.00
10,200.0	90.00	90.26	7,092.0	-2,284.00	-937.3	4,272.9	4,327.2	0.00	0.00	0.00
10,300.0	90.00	90.26	7,092.0	-2,284.00	-937.7	4,372.9	4,426.9	0.00	0.00	0.00
10,400.0	90.00	90.26	7,092.0	-2,284.00	-938.2	4,472.9	4,526.7	0.00	0.00	0.00
10,500.0	90.00	90.26	7,092.0	-2,284.00	-938.6	4,572.9	4,626.5	0.00	0.00	0.00
10,600.0	90.00	90.26	7,092.0	-2,284.00	-939.1	4,672.9	4,726.3	0.00	0.00	0.00
10,700.0	90.00	90.26	7,092.0	-2,284.00	-939.5	4,772.9	4,826.1	0.00	0.00	0.00
10,800.0	90.00	90.26	7,092.0	-2,284.00	-940.0	4,872.9	4,925.9	0.00	0.00	0.00
10,900.0	90.00	90.26	7,092.0	-2,284.00	-940.5	4,972.9	5,025.7	0.00	0.00	0.00
11,000.0	90.00	90.26	7,092.0	-2,284.00	-940.9	5,072.9	5,125.5	0.00	0.00	0.00
11,100.0	90.00	90.26	7,092.0	-2,284.00	-941.4	5,172.9	5,225.3	0.00	0.00	0.00
11,200.0	90.00	90.26	7,092.0	-2,284.00	-941.8	5,272.9	5,325.1	0.00	0.00	0.00
11,300.0	90.00	90.26	7,092.0	-2,284.00	-942.3	5,372.9	5,424.9	0.00	0.00	0.00
11,400.0	90.00	90.26	7,092.0	-2,284.00	-942.8	5,472.9	5,524.7	0.00	0.00	0.00
11,500.0	90.00	90.26	7,092.0	-2,284.00	-943.2	5,572.9	5,624.5	0.00	0.00	0.00
11,600.0	90.00	90.26	7,092.0	-2,284.00	-943.7	5,672.9	5,724.3	0.00	0.00	0.00
11,700.0	90.00	90.26	7,092.0	-2,284.00	-944.1	5,772.9	5,824.1	0.00	0.00	0.00
11,800.0	90.00	90.26	7,092.0	-2,284.00	-944.6	5,872.9	5,923.9	0.00	0.00	0.00
11,900.0	90.00	90.26	7,092.0	-2,284.00	-945.0	5,972.9	6,023.7	0.00	0.00	0.00
12,000.0	90.00	90.26	7,092.0	-2,284.00	-945.5	6,072.9	6,123.5	0.00	0.00	0.00
12,100.0	90.00	90.26	7,092.0	-2,284.00	-946.0	6,172.9	6,223.3	0.00	0.00	0.00
12,200.0	90.00	90.26	7,092.0	-2,284.00	-946.4	6,272.9	6,323.1	0.00	0.00	0.00
12,300.0	90.00	90.26	7,092.0	-2,284.00	-946.9	6,372.9	6,422.8	0.00	0.00	0.00
12,400.0	90.00	90.26	7,092.0	-2,284.00	-947.3	6,472.9	6,522.6	0.00	0.00	0.00
12,500.0	90.00	90.26	7,092.0	-2,284.00	-947.8	6,572.9	6,622.4	0.00	0.00	0.00
12,600.0	90.00	90.26	7,092.0	-2,284.00	-948.2	6,672.9	6,722.2	0.00	0.00	0.00
12,700.0	90.00	90.26	7,092.0	-2,284.00	-948.7	6,772.9	6,822.0	0.00	0.00	0.00
12,800.0	90.00	90.26	7,092.0	-2,284.00	-949.2	6,872.9	6,921.8	0.00	0.00	0.00
12,900.0	90.00	90.26	7,092.0	-2,284.00	-949.6	6,972.9	7,021.6	0.00	0.00	0.00
13,000.0	90.00	90.26	7,092.0	-2,284.00	-950.1	7,072.9	7,121.4	0.00	0.00	0.00
13,100.0	90.00	90.26	7,092.0	-2,284.00	-950.5	7,172.9	7,221.2	0.00	0.00	0.00
13,200.0	90.00	90.26	7,092.0	-2,284.00	-951.0	7,272.9	7,321.0	0.00	0.00	0.00
13,300.0	90.00	90.26	7,092.0	-2,284.00	-951.4	7,372.9	7,420.8	0.00	0.00	0.00
13,400.0	90.00	90.26	7,092.0	-2,284.00	-951.9	7,472.9	7,520.6	0.00	0.00	0.00
13,500.0	90.00	90.26	7,092.0	-2,284.00	-952.4	7,572.9	7,620.4	0.00	0.00	0.00
13,600.0	90.00	90.26	7,092.0	-2,284.00	-952.8	7,672.9	7,720.2	0.00	0.00	0.00
13,700.0	90.00	90.26	7,092.0	-2,284.00	-953.3	7,772.9	7,820.0	0.00	0.00	0.00
13,800.0	90.00	90.26	7,092.0	-2,284.00	-953.7	7,872.9	7,919.8	0.00	0.00	0.00
13,900.0	90.00	90.26	7,092.0	-2,284.00	-954.2	7,972.9	8,019.6	0.00	0.00	0.00
14,000.0	90.00	90.26	7,092.0	-2,284.00	-954.6	8,072.9	8,119.4	0.00	0.00	0.00
14,100.0	90.00	90.26	7,092.0	-2,284.00	-955.1	8,172.9	8,219.2	0.00	0.00	0.00
14,200.0	90.00	90.26	7,092.0	-2,284.00	-955.6	8,272.9	8,318.9	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	90.26	7,092.0	-2,284.00	-956.0	8,372.9	8,418.7	0.00	0.00	0.00
14,400.0	90.00	90.26	7,092.0	-2,284.00	-956.5	8,472.9	8,518.5	0.00	0.00	0.00
14,500.0	90.00	90.26	7,092.0	-2,284.00	-956.9	8,572.9	8,618.3	0.00	0.00	0.00
14,600.0	90.00	90.26	7,092.0	-2,284.00	-957.4	8,672.9	8,718.1	0.00	0.00	0.00
14,700.0	90.00	90.26	7,092.0	-2,284.00	-957.8	8,772.9	8,817.9	0.00	0.00	0.00
14,800.0	90.00	90.26	7,092.0	-2,284.00	-958.3	8,872.9	8,917.7	0.00	0.00	0.00
14,900.0	90.00	90.26	7,092.0	-2,284.00	-958.8	8,972.9	9,017.5	0.00	0.00	0.00
15,000.0	90.00	90.26	7,092.0	-2,284.00	-959.2	9,072.9	9,117.3	0.00	0.00	0.00
15,100.0	90.00	90.26	7,092.0	-2,284.00	-959.7	9,172.9	9,217.1	0.00	0.00	0.00
15,200.0	90.00	90.26	7,092.0	-2,284.00	-960.1	9,272.9	9,316.9	0.00	0.00	0.00
15,300.0	90.00	90.26	7,092.0	-2,284.00	-960.6	9,372.9	9,416.7	0.00	0.00	0.00
15,400.0	90.00	90.26	7,092.0	-2,284.00	-961.0	9,472.9	9,516.5	0.00	0.00	0.00
15,500.0	90.00	90.26	7,092.0	-2,284.00	-961.5	9,572.9	9,616.3	0.00	0.00	0.00
15,600.0	90.00	90.26	7,092.0	-2,284.00	-962.0	9,672.9	9,716.1	0.00	0.00	0.00
15,700.0	90.00	90.26	7,092.0	-2,284.00	-962.4	9,772.9	9,815.9	0.00	0.00	0.00
15,800.0	90.00	90.26	7,092.0	-2,284.00	-962.9	9,872.9	9,915.7	0.00	0.00	0.00
15,900.0	90.00	90.26	7,092.0	-2,284.00	-963.3	9,972.9	10,015.5	0.00	0.00	0.00
16,000.0	90.00	90.26	7,092.0	-2,284.00	-963.8	10,072.9	10,115.3	0.00	0.00	0.00
16,100.0	90.00	90.26	7,092.0	-2,284.00	-964.2	10,172.9	10,215.1	0.00	0.00	0.00
16,200.0	90.00	90.26	7,092.0	-2,284.00	-964.7	10,272.9	10,314.8	0.00	0.00	0.00
16,300.0	90.00	90.26	7,092.0	-2,284.00	-965.2	10,372.9	10,414.6	0.00	0.00	0.00
16,400.0	90.00	90.26	7,092.0	-2,284.00	-965.6	10,472.9	10,514.4	0.00	0.00	0.00
16,500.0	90.00	90.26	7,092.0	-2,284.00	-966.1	10,572.9	10,614.2	0.00	0.00	0.00
16,600.0	90.00	90.26	7,092.0	-2,284.00	-966.5	10,672.9	10,714.0	0.00	0.00	0.00
16,700.0	90.00	90.26	7,092.0	-2,284.00	-967.0	10,772.9	10,813.8	0.00	0.00	0.00
16,800.0	90.00	90.26	7,092.0	-2,284.00	-967.4	10,872.9	10,913.6	0.00	0.00	0.00
16,900.0	90.00	90.26	7,092.0	-2,284.00	-967.9	10,972.9	11,013.4	0.00	0.00	0.00
17,000.0	90.00	90.26	7,092.0	-2,284.00	-968.4	11,072.9	11,113.2	0.00	0.00	0.00
17,100.0	90.00	90.26	7,092.0	-2,284.00	-968.8	11,172.9	11,213.0	0.00	0.00	0.00
17,200.0	90.00	90.26	7,092.0	-2,284.00	-969.3	11,272.9	11,312.8	0.00	0.00	0.00
17,300.0	90.00	90.26	7,092.0	-2,284.00	-969.7	11,372.9	11,412.6	0.00	0.00	0.00
17,400.0	90.00	90.26	7,092.0	-2,284.00	-970.2	11,472.9	11,512.4	0.00	0.00	0.00
17,500.0	90.00	90.26	7,092.0	-2,284.00	-970.6	11,572.9	11,612.2	0.00	0.00	0.00
17,600.0	90.00	90.26	7,092.0	-2,284.00	-971.1	11,672.9	11,712.0	0.00	0.00	0.00
17,700.0	90.00	90.26	7,092.0	-2,284.00	-971.6	11,772.9	11,811.8	0.00	0.00	0.00
17,800.0	90.00	90.26	7,092.0	-2,284.00	-972.0	11,872.9	11,911.6	0.00	0.00	0.00
17,900.0	90.00	90.26	7,092.0	-2,284.00	-972.5	11,972.9	12,011.4	0.00	0.00	0.00
18,000.0	90.00	90.26	7,092.0	-2,284.00	-972.9	12,072.9	12,111.2	0.00	0.00	0.00
18,100.0	90.00	90.26	7,092.0	-2,284.00	-973.4	12,172.9	12,211.0	0.00	0.00	0.00
18,200.0	90.00	90.26	7,092.0	-2,284.00	-973.8	12,272.9	12,310.7	0.00	0.00	0.00
18,300.0	90.00	90.26	7,092.0	-2,284.00	-974.3	12,372.9	12,410.5	0.00	0.00	0.00
18,400.0	90.00	90.26	7,092.0	-2,284.00	-974.8	12,472.9	12,510.3	0.00	0.00	0.00
18,500.0	90.00	90.26	7,092.0	-2,284.00	-975.2	12,572.9	12,610.1	0.00	0.00	0.00
18,600.0	90.00	90.26	7,092.0	-2,284.00	-975.7	12,672.9	12,709.9	0.00	0.00	0.00
18,700.0	90.00	90.26	7,092.0	-2,284.00	-976.1	12,772.8	12,809.7	0.00	0.00	0.00
18,800.0	90.00	90.26	7,092.0	-2,284.00	-976.6	12,872.8	12,909.5	0.00	0.00	0.00
18,900.0	90.00	90.26	7,092.0	-2,284.00	-977.1	12,972.8	13,009.3	0.00	0.00	0.00
19,000.0	90.00	90.26	7,092.0	-2,284.00	-977.5	13,072.8	13,109.1	0.00	0.00	0.00
19,100.0	90.00	90.26	7,092.0	-2,284.00	-978.0	13,172.8	13,208.9	0.00	0.00	0.00
19,200.0	90.00	90.26	7,092.0	-2,284.00	-978.4	13,272.8	13,308.7	0.00	0.00	0.00
19,300.0	90.00	90.26	7,092.0	-2,284.00	-978.9	13,372.8	13,408.5	0.00	0.00	0.00
19,400.0	90.00	90.26	7,092.0	-2,284.00	-979.3	13,472.8	13,508.3	0.00	0.00	0.00
19,500.0	90.00	90.26	7,092.0	-2,284.00	-979.8	13,572.8	13,608.1	0.00	0.00	0.00
19,600.0	90.00	90.26	7,092.0	-2,284.00	-980.3	13,672.8	13,707.9	0.00	0.00	0.00

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well TC-HILAND KNOLLS 1-9-11
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB-EST @ 4808.0usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4808.0usft
<b>Site:</b>	NE SE SEC. 8 T5N R66W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	TC-HILAND KNOLLS 1-9-11	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	90.26	7,092.0	-2,284.00	-980.7	13,772.8	13,807.7	0.00	0.00	0.00
19,800.0	90.00	90.26	7,092.0	-2,284.00	-981.2	13,872.8	13,907.5	0.00	0.00	0.00
19,900.0	90.00	90.26	7,092.0	-2,284.00	-981.6	13,972.8	14,007.3	0.00	0.00	0.00
20,000.0	90.00	90.26	7,092.0	-2,284.00	-982.1	14,072.8	14,107.1	0.00	0.00	0.00
20,100.0	90.00	90.26	7,092.0	-2,284.00	-982.5	14,172.8	14,206.8	0.00	0.00	0.00
20,200.0	90.00	90.26	7,092.0	-2,284.00	-983.0	14,272.8	14,306.6	0.00	0.00	0.00
<b>BHL: 1649ft FSL &amp; 2505ft FWL of Sec 11</b>										
<b>20,229.6</b>	<b>90.00</b>	<b>90.26</b>	<b>7,092.0</b>	<b>-2,284.00</b>	<b>-983.1</b>	<b>14,302.4</b>	<b>14,336.2</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## Formations

MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,757.5	3,680.0	PARKMAN			
4,507.4	4,410.0	SUSSEX			
4,928.6	4,820.0	SHANNON			
7,151.7	6,940.0	SHARON SPRINGS			
7,201.5	6,972.0	NIOBRARA			
7,581.2	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: 2584ft FSL & 1189ft FEL of Sec 8
400.0	400.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,061.7	1,055.8	-47.0	59.9	EOB TO 13.23° INC
6,785.3	6,627.4	-855.7	1,090.9	START BUILD & TURN
7,581.2	7,092.0	-925.3	1,654.2	HZ LP: 1650ft FSL & 460ft FWL of Sec 9
20,229.6	7,092.0	-983.1	14,302.4	BHL: 1649ft FSL & 2505ft FWL of Sec 11