

EXTRACTION OIL & GAS

Broomfield County

Sec 10-T1S-R68W

INTERCHANGE A S16-20-20N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

23 January, 2018



Project: Broomfield County
Site: Sec 10-T1S-R68W
Well: INTERCHANGE A S16-20-20N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

PROJECT DETAILS: Broomfield County

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

System Datum: Mean Sea Level



Azimuths to True North
Magnetic North: 8.24°

Magnetic Field
Strength: 52081.7snT
Dip Angle: 66.47°
Date: 1/9/2018
Model: IGRF2015

WELL DETAILS: INTERCHANGE A S16-20-20N

+N/-S	+E/-W	Northing	Easting	5236.00	Latitude	Longitude	Slot
0.00	0.00	1236296.14	3141830.83		39° 58' 51.261 N	104° 59' 37.961 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1401.27	24.03	337.06	1366.38	228.56	-96.73	2.00	337.06	-215.28	
4	6656.29	24.03	337.06	6166.12	2198.92	-930.62	0.00	0.00	-2071.14	
5	7857.56	0.00	0.00	7332.50	2427.48	-1027.35	2.00	180.00	-2286.42	
6	7887.56	0.00	0.00	7362.50	2427.48	-1027.35	0.00	0.00	-2286.42	
7	8637.62	90.00	179.69	7840.00	1949.98	-1024.73	12.00	179.69	-1812.70	INTERCHANGE A S16-20N - LP
8	18604.64	90.00	179.69	7840.00	-8016.89	-970.48	0.00	96.51	8075.42	INTERCHANGE A S16-20N - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4915.00	5286.49	PARKMAN
5030.00	5412.40	SUSSEX
7644.00	8188.61	SHANNON
7664.00	8213.87	NIORARA
7830.00	8539.72	NIO B TARGET

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	Start Build 2.00
1401.27	24.03	337.06	1366.38	228.56	-96.73	-215.28	248.19	Start 5255.02 hold at 1401.27 MD
6656.29	24.03	337.06	6166.12	2198.92	-930.62	-2071.14	2387.73	Start Drop -2.00
7857.56	0.00	0.00	7332.50	2427.48	-1027.35	-2286.42	2635.93	Start 30.00 hold at 7857.56 MD
7887.56	0.00	0.00	7362.50	2427.48	-1027.35	-2286.42	2635.93	Start DLS 12.00 TFO 179.69
8637.62	90.00	179.69	7840.00	1949.98	-1024.73	-1812.70	3113.43	Start DLS 0.00 TFO 96.51
18604.64	90.00	179.69	7840.00	-8016.89	-970.48	8075.42	13080.45	TD at 18604.64

DESIGN TARGET DETAILS

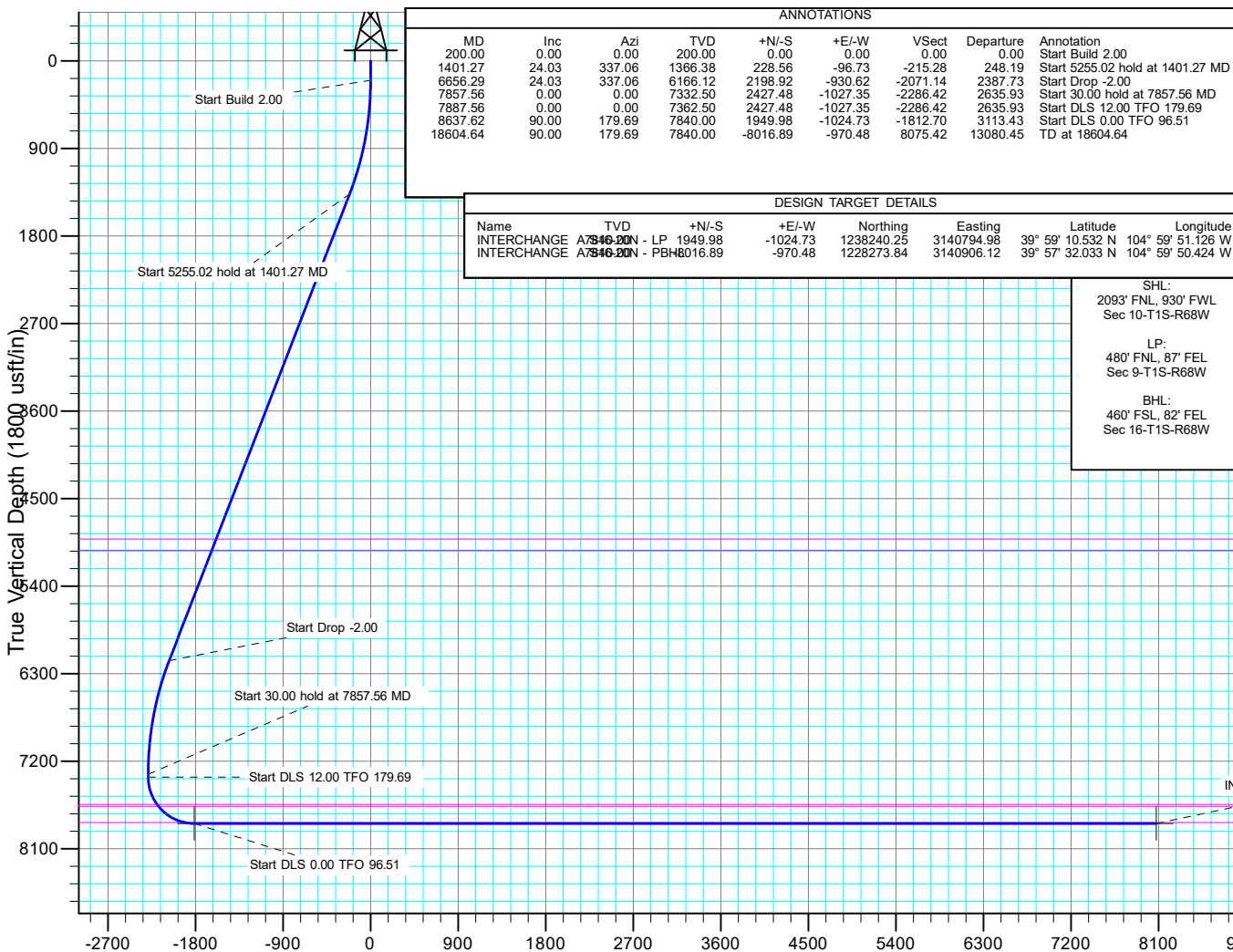
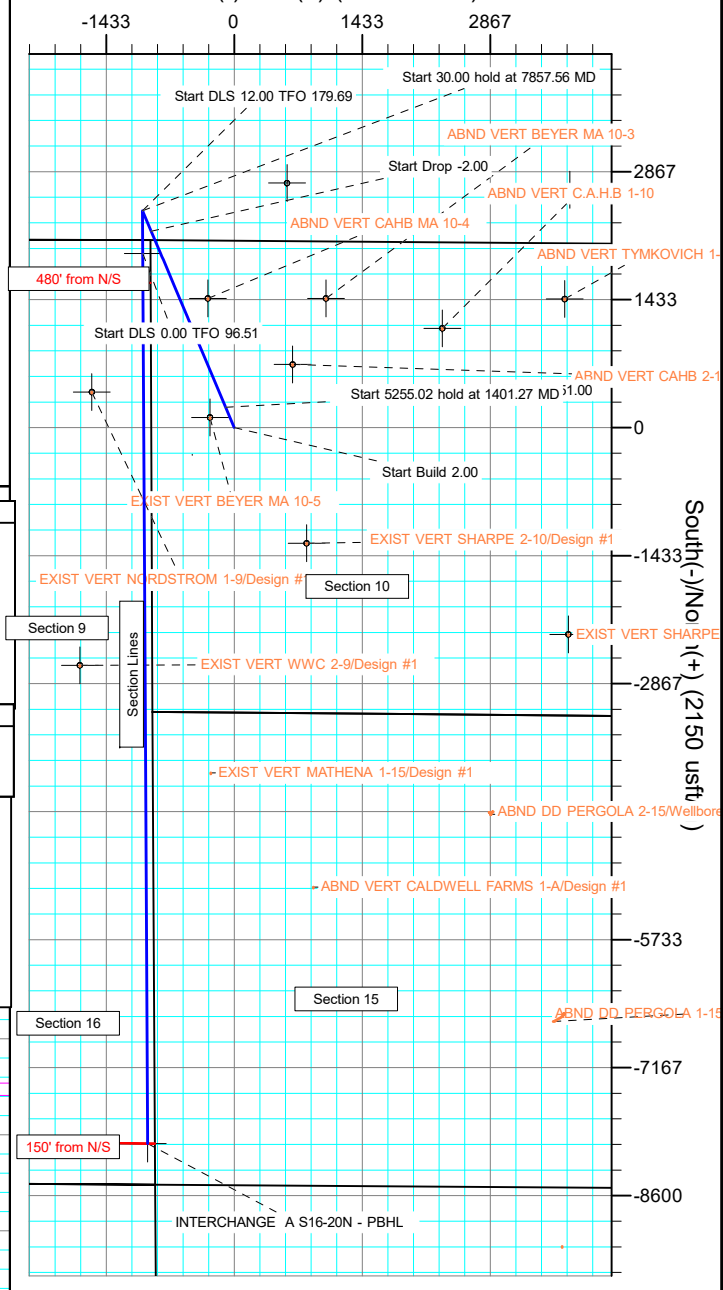
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
INTERCHANGE A S16-20N - LP	7840.00	1949.98	-1024.73	1238240.25	3140794.98	39° 59' 10.532 N	104° 59' 51.126 W
INTERCHANGE A S16-20N - PBHL	7840.00	-8016.89	-970.48	1228273.84	3140906.12	39° 57' 32.033 N	104° 59' 50.424 W

SHL:
2093' FNL, 930' FWL
Sec 10-T1S-R68W

LP:
480' FNL, 87' FEL
Sec 9-T1S-R68W

BHL:
460' FSL, 82' FEL
Sec 16-T1S-R68W

West(-)/East(+) (2150 usft/in)



Vertical Section at 186.90° (1800 usft/in)

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Project	Broomfield County		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 10-T1S-R68W			
Site Position:		Northing:	1,238,390.57 usft	Latitude:	39° 59' 12.013 N
From:	Lat/Long	Easting:	3,140,881.15 usft	Longitude:	104° 59' 50.008 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	INTERCHANGE A S16-20-20N					
Well Position	+N/-S	-2,099.78 usft	Northing:	1,236,296.14 usft	Latitude:	39° 58' 51.261 N
	+E/-W	937.79 usft	Easting:	3,141,830.83 usft	Longitude:	104° 59' 37.961 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,236.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/9/2018	8.24	66.47	52,081.69465916

Design	PROPOSAL 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	186.90

Plan Survey Tool Program	Date	1/23/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,604.27	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,401.27	24.03	337.06	1,366.38	228.56	-96.73	2.00	2.00	0.00	337.06	
6,656.29	24.03	337.06	6,166.12	2,198.92	-930.62	0.00	0.00	0.00	0.00	
7,857.56	0.00	0.00	7,332.50	2,427.48	-1,027.35	2.00	-2.00	0.00	180.00	
7,887.56	0.00	0.00	7,362.50	2,427.48	-1,027.35	0.00	0.00	0.00	0.00	
8,637.62	90.00	179.69	7,840.00	1,949.98	-1,024.73	12.00	12.00	23.96	179.69	INTERCHANGE A S'
18,604.64	90.00	179.69	7,840.00	-8,016.89	-970.48	0.00	0.00	0.00	96.51	INTERCHANGE A S'

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
300.00	2.00	337.06	299.98	1.61	-0.68	-1.51	2.00	2.00	0.00
400.00	4.00	337.06	399.84	6.43	-2.72	-6.05	2.00	2.00	0.00
500.00	6.00	337.06	499.45	14.45	-6.12	-13.61	2.00	2.00	0.00
600.00	8.00	337.06	598.70	25.68	-10.87	-24.18	2.00	2.00	0.00
700.00	10.00	337.06	697.47	40.08	-16.96	-37.75	2.00	2.00	0.00
800.00	12.00	337.06	795.62	57.65	-24.40	-54.30	2.00	2.00	0.00
900.00	14.00	337.06	893.06	78.37	-33.17	-73.81	2.00	2.00	0.00
1,000.00	16.00	337.06	989.64	102.20	-43.25	-96.26	2.00	2.00	0.00
1,100.00	18.00	337.06	1,085.27	129.13	-54.65	-121.62	2.00	2.00	0.00
1,200.00	20.00	337.06	1,179.82	159.11	-67.34	-149.86	2.00	2.00	0.00
1,300.00	22.00	337.06	1,273.17	192.11	-81.30	-180.94	2.00	2.00	0.00
1,401.27	24.03	337.06	1,366.38	228.56	-96.73	-215.28	2.00	2.00	0.00
Start 5255.02 hold at 1401.27 MD									
1,500.00	24.03	337.06	1,456.55	265.58	-112.40	-250.15	0.00	0.00	0.00
1,600.00	24.03	337.06	1,547.89	303.08	-128.27	-285.47	0.00	0.00	0.00
1,700.00	24.03	337.06	1,639.22	340.57	-144.14	-320.78	0.00	0.00	0.00
1,800.00	24.03	337.06	1,730.56	378.07	-160.00	-356.10	0.00	0.00	0.00
1,900.00	24.03	337.06	1,821.90	415.56	-175.87	-391.41	0.00	0.00	0.00
2,000.00	24.03	337.06	1,913.23	453.06	-191.74	-426.73	0.00	0.00	0.00
2,100.00	24.03	337.06	2,004.57	490.55	-207.61	-462.05	0.00	0.00	0.00
2,200.00	24.03	337.06	2,095.91	528.05	-223.48	-497.36	0.00	0.00	0.00
2,300.00	24.03	337.06	2,187.24	565.54	-239.35	-532.68	0.00	0.00	0.00
2,400.00	24.03	337.06	2,278.58	603.03	-255.21	-567.99	0.00	0.00	0.00
2,500.00	24.03	337.06	2,369.92	640.53	-271.08	-603.31	0.00	0.00	0.00
2,600.00	24.03	337.06	2,461.25	678.02	-286.95	-638.63	0.00	0.00	0.00
2,700.00	24.03	337.06	2,552.59	715.52	-302.82	-673.94	0.00	0.00	0.00
2,800.00	24.03	337.06	2,643.93	753.01	-318.69	-709.26	0.00	0.00	0.00
2,900.00	24.03	337.06	2,735.26	790.51	-334.56	-744.57	0.00	0.00	0.00
3,000.00	24.03	337.06	2,826.60	828.00	-350.42	-779.89	0.00	0.00	0.00
3,100.00	24.03	337.06	2,917.93	865.50	-366.29	-815.20	0.00	0.00	0.00
3,200.00	24.03	337.06	3,009.27	902.99	-382.16	-850.52	0.00	0.00	0.00
3,300.00	24.03	337.06	3,100.61	940.49	-398.03	-885.84	0.00	0.00	0.00
3,400.00	24.03	337.06	3,191.94	977.98	-413.90	-921.15	0.00	0.00	0.00
3,500.00	24.03	337.06	3,283.28	1,015.48	-429.77	-956.47	0.00	0.00	0.00
3,600.00	24.03	337.06	3,374.62	1,052.97	-445.63	-991.78	0.00	0.00	0.00
3,700.00	24.03	337.06	3,465.95	1,090.46	-461.50	-1,027.10	0.00	0.00	0.00
3,800.00	24.03	337.06	3,557.29	1,127.96	-477.37	-1,062.42	0.00	0.00	0.00
3,900.00	24.03	337.06	3,648.63	1,165.45	-493.24	-1,097.73	0.00	0.00	0.00
4,000.00	24.03	337.06	3,739.96	1,202.95	-509.11	-1,133.05	0.00	0.00	0.00
4,100.00	24.03	337.06	3,831.30	1,240.44	-524.98	-1,168.36	0.00	0.00	0.00
4,200.00	24.03	337.06	3,922.64	1,277.94	-540.84	-1,203.68	0.00	0.00	0.00
4,300.00	24.03	337.06	4,013.97	1,315.43	-556.71	-1,239.00	0.00	0.00	0.00
4,400.00	24.03	337.06	4,105.31	1,352.93	-572.58	-1,274.31	0.00	0.00	0.00
4,500.00	24.03	337.06	4,196.64	1,390.42	-588.45	-1,309.63	0.00	0.00	0.00
4,600.00	24.03	337.06	4,287.98	1,427.92	-604.32	-1,344.94	0.00	0.00	0.00
4,700.00	24.03	337.06	4,379.32	1,465.41	-620.19	-1,380.26	0.00	0.00	0.00
4,800.00	24.03	337.06	4,470.65	1,502.91	-636.05	-1,415.57	0.00	0.00	0.00
4,900.00	24.03	337.06	4,561.99	1,540.40	-651.92	-1,450.89	0.00	0.00	0.00
5,000.00	24.03	337.06	4,653.33	1,577.89	-667.79	-1,486.21	0.00	0.00	0.00

Planning Report

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Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,100.00	24.03	337.06	4,744.66	1,615.39	-683.66	-1,521.52	0.00	0.00	0.00	
5,200.00	24.03	337.06	4,836.00	1,652.88	-699.53	-1,556.84	0.00	0.00	0.00	
5,286.49	24.03	337.06	4,915.00	1,685.31	-713.25	-1,587.38	0.00	0.00	0.00	
PARKMAN										
5,300.00	24.03	337.06	4,927.34	1,690.38	-715.40	-1,592.15	0.00	0.00	0.00	
5,400.00	24.03	337.06	5,018.67	1,727.87	-731.26	-1,627.47	0.00	0.00	0.00	
5,412.40	24.03	337.06	5,030.00	1,732.52	-733.23	-1,631.85	0.00	0.00	0.00	
SUSSEX										
5,500.00	24.03	337.06	5,110.01	1,765.37	-747.13	-1,662.79	0.00	0.00	0.00	
5,600.00	24.03	337.06	5,201.35	1,802.86	-763.00	-1,698.10	0.00	0.00	0.00	
5,700.00	24.03	337.06	5,292.68	1,840.36	-778.87	-1,733.42	0.00	0.00	0.00	
5,800.00	24.03	337.06	5,384.02	1,877.85	-794.74	-1,768.73	0.00	0.00	0.00	
5,900.00	24.03	337.06	5,475.36	1,915.35	-810.61	-1,804.05	0.00	0.00	0.00	
6,000.00	24.03	337.06	5,566.69	1,952.84	-826.47	-1,839.37	0.00	0.00	0.00	
6,100.00	24.03	337.06	5,658.03	1,990.34	-842.34	-1,874.68	0.00	0.00	0.00	
6,200.00	24.03	337.06	5,749.36	2,027.83	-858.21	-1,910.00	0.00	0.00	0.00	
6,300.00	24.03	337.06	5,840.70	2,065.33	-874.08	-1,945.31	0.00	0.00	0.00	
6,400.00	24.03	337.06	5,932.04	2,102.82	-889.95	-1,980.63	0.00	0.00	0.00	
6,500.00	24.03	337.06	6,023.37	2,140.31	-905.82	-2,015.94	0.00	0.00	0.00	
6,600.00	24.03	337.06	6,114.71	2,177.81	-921.69	-2,051.26	0.00	0.00	0.00	
6,656.29	24.03	337.06	6,166.12	2,198.92	-930.62	-2,071.14	0.00	0.00	0.00	
Start Drop -2.00										
6,700.00	23.15	337.06	6,206.18	2,215.02	-937.43	-2,086.31	2.00	-2.00	0.00	
6,800.00	21.15	337.06	6,298.80	2,249.74	-952.13	-2,119.02	2.00	-2.00	0.00	
6,900.00	19.15	337.06	6,392.67	2,281.47	-965.56	-2,148.90	2.00	-2.00	0.00	
7,000.00	17.15	337.06	6,487.69	2,310.16	-977.70	-2,175.92	2.00	-2.00	0.00	
7,100.00	15.15	337.06	6,583.74	2,335.77	-988.54	-2,200.05	2.00	-2.00	0.00	
7,200.00	13.15	337.06	6,680.70	2,358.29	-998.07	-2,221.25	2.00	-2.00	0.00	
7,300.00	11.15	337.06	6,778.45	2,377.67	-1,006.27	-2,239.51	2.00	-2.00	0.00	
7,400.00	9.15	337.06	6,876.88	2,393.90	-1,013.14	-2,254.80	2.00	-2.00	0.00	
7,500.00	7.15	337.06	6,975.87	2,406.96	-1,018.66	-2,267.09	2.00	-2.00	0.00	
7,600.00	5.15	337.06	7,075.29	2,416.82	-1,022.84	-2,276.39	2.00	-2.00	0.00	
7,700.00	3.15	337.06	7,175.02	2,423.49	-1,025.66	-2,282.67	2.00	-2.00	0.00	
7,800.00	1.15	337.06	7,274.94	2,426.95	-1,027.12	-2,285.92	2.00	-2.00	0.00	
7,857.56	0.00	0.00	7,332.50	2,427.48	-1,027.35	-2,286.42	2.00	-2.00	39.85	
Start 30.00 hold at 7857.56 MD										
7,887.56	0.00	0.00	7,362.50	2,427.48	-1,027.35	-2,286.42	0.00	0.00	0.00	
Start DLS 12.00 TFO 179.69										
7,900.00	1.49	179.69	7,374.94	2,427.32	-1,027.35	-2,286.26	12.00	12.00	0.00	
7,925.00	4.49	179.69	7,399.90	2,426.01	-1,027.34	-2,284.97	12.00	12.00	0.00	
7,950.00	7.49	179.69	7,424.76	2,423.40	-1,027.33	-2,282.38	12.00	12.00	0.00	
7,975.00	10.49	179.69	7,449.45	2,419.50	-1,027.31	-2,278.50	12.00	12.00	0.00	
8,000.00	13.49	179.69	7,473.90	2,414.30	-1,027.28	-2,273.35	12.00	12.00	0.00	
8,025.00	16.49	179.69	7,498.05	2,407.84	-1,027.24	-2,266.94	12.00	12.00	0.00	
8,050.00	19.49	179.69	7,521.82	2,400.12	-1,027.20	-2,259.28	12.00	12.00	0.00	
8,075.00	22.49	179.69	7,545.16	2,391.16	-1,027.15	-2,250.39	12.00	12.00	0.00	
8,100.00	25.49	179.69	7,568.00	2,381.00	-1,027.09	-2,240.31	12.00	12.00	0.00	
8,125.00	28.49	179.69	7,590.27	2,369.65	-1,027.03	-2,229.05	12.00	12.00	0.00	
8,150.00	31.49	179.69	7,611.92	2,357.16	-1,026.96	-2,216.66	12.00	12.00	0.00	
8,175.00	34.49	179.69	7,632.89	2,343.55	-1,026.89	-2,203.16	12.00	12.00	0.00	
8,188.61	36.12	179.69	7,644.00	2,335.68	-1,026.85	-2,195.35	12.00	12.00	0.00	
SHANNON										
8,200.00	37.49	179.69	7,653.12	2,328.86	-1,026.81	-2,188.58	12.00	12.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,213.87	39.15	179.69	7,664.00	2,320.26	-1,026.76	-2,180.05	12.00	12.00	0.00	
NIOBRARA										
8,225.00	40.49	179.69	7,672.55	2,313.13	-1,026.72	-2,172.98	12.00	12.00	0.00	
8,250.00	43.49	179.69	7,691.13	2,296.41	-1,026.63	-2,156.39	12.00	12.00	0.00	
8,275.00	46.49	179.69	7,708.80	2,278.74	-1,026.53	-2,138.86	12.00	12.00	0.00	
8,300.00	49.49	179.69	7,725.53	2,260.16	-1,026.43	-2,120.43	12.00	12.00	0.00	
8,325.00	52.49	179.69	7,741.27	2,240.74	-1,026.32	-2,101.16	12.00	12.00	0.00	
8,350.00	55.49	179.69	7,755.97	2,220.52	-1,026.21	-2,081.10	12.00	12.00	0.00	
8,375.00	58.49	179.69	7,769.58	2,199.56	-1,026.10	-2,060.31	12.00	12.00	0.00	
8,400.00	61.49	179.69	7,782.09	2,177.91	-1,025.98	-2,038.83	12.00	12.00	0.00	
8,425.00	64.49	179.69	7,793.44	2,155.64	-1,025.86	-2,016.74	12.00	12.00	0.00	
8,450.00	67.49	179.69	7,803.61	2,132.81	-1,025.73	-1,994.08	12.00	12.00	0.00	
8,475.00	70.49	179.69	7,812.58	2,109.48	-1,025.60	-1,970.93	12.00	12.00	0.00	
8,500.00	73.49	179.69	7,820.31	2,085.71	-1,025.47	-1,947.35	12.00	12.00	0.00	
8,525.00	76.49	179.69	7,826.78	2,061.56	-1,025.34	-1,923.40	12.00	12.00	0.00	
8,539.72	78.25	179.69	7,830.00	2,047.20	-1,025.26	-1,909.15	12.00	12.00	0.00	
NIO B TARGET										
8,550.00	79.49	179.69	7,831.98	2,037.11	-1,025.21	-1,899.14	12.00	12.00	0.00	
8,575.00	82.49	179.69	7,835.90	2,012.42	-1,025.07	-1,874.65	12.00	12.00	0.00	
8,600.00	85.49	179.69	7,838.52	1,987.56	-1,024.93	-1,849.99	12.00	12.00	0.00	
8,625.00	88.49	179.69	7,839.83	1,962.60	-1,024.80	-1,825.22	12.00	12.00	0.00	
8,637.62	90.00	179.69	7,840.00	1,949.98	-1,024.73	-1,812.70	12.00	12.00	0.00	
Start DLS 0.00 TFO 96.51										
8,700.00	90.00	179.69	7,840.00	1,887.61	-1,024.39	-1,750.82	0.00	0.00	0.00	
8,800.00	90.00	179.69	7,840.00	1,787.61	-1,023.84	-1,651.61	0.00	0.00	0.00	
8,900.00	90.00	179.69	7,840.00	1,687.61	-1,023.29	-1,552.40	0.00	0.00	0.00	
9,000.00	90.00	179.69	7,840.00	1,587.61	-1,022.74	-1,453.19	0.00	0.00	0.00	
9,100.00	90.00	179.69	7,840.00	1,487.61	-1,022.19	-1,353.99	0.00	0.00	0.00	
9,200.00	90.00	179.69	7,840.00	1,387.61	-1,021.64	-1,254.78	0.00	0.00	0.00	
9,300.00	90.00	179.69	7,840.00	1,287.61	-1,021.09	-1,155.57	0.00	0.00	0.00	
9,400.00	90.00	179.69	7,840.00	1,187.62	-1,020.54	-1,056.36	0.00	0.00	0.00	
9,500.00	90.00	179.69	7,840.00	1,087.62	-1,020.00	-957.16	0.00	0.00	0.00	
9,600.00	90.00	179.69	7,840.00	987.62	-1,019.45	-857.95	0.00	0.00	0.00	
9,700.00	90.00	179.69	7,840.00	887.62	-1,018.90	-758.74	0.00	0.00	0.00	
9,800.00	90.00	179.69	7,839.99	787.62	-1,018.35	-659.53	0.00	0.00	0.00	
9,900.00	90.00	179.69	7,839.99	687.62	-1,017.80	-560.32	0.00	0.00	0.00	
10,000.00	90.00	179.69	7,839.99	587.62	-1,017.26	-461.12	0.00	0.00	0.00	
10,100.00	90.00	179.69	7,839.99	487.63	-1,016.71	-361.91	0.00	0.00	0.00	
10,200.00	90.00	179.69	7,839.99	387.63	-1,016.16	-262.70	0.00	0.00	0.00	
10,300.00	90.00	179.69	7,839.99	287.63	-1,015.61	-163.49	0.00	0.00	0.00	
10,400.00	90.00	179.69	7,839.99	187.63	-1,015.07	-64.28	0.00	0.00	0.00	
10,500.00	90.00	179.69	7,839.99	87.63	-1,014.52	34.92	0.00	0.00	0.00	
10,600.00	90.00	179.69	7,839.99	-12.37	-1,013.97	134.13	0.00	0.00	0.00	
10,700.00	90.00	179.69	7,839.99	-112.36	-1,013.42	233.34	0.00	0.00	0.00	
10,800.00	90.00	179.69	7,839.99	-212.36	-1,012.88	332.55	0.00	0.00	0.00	
10,900.00	90.00	179.69	7,839.99	-312.36	-1,012.33	431.76	0.00	0.00	0.00	
11,000.00	90.00	179.69	7,839.99	-412.36	-1,011.78	530.96	0.00	0.00	0.00	
11,100.00	90.00	179.69	7,839.99	-512.36	-1,011.24	630.17	0.00	0.00	0.00	
11,200.00	90.00	179.69	7,839.99	-612.36	-1,010.69	729.38	0.00	0.00	0.00	
11,300.00	90.00	179.69	7,839.99	-712.36	-1,010.14	828.59	0.00	0.00	0.00	
11,400.00	90.00	179.69	7,839.99	-812.35	-1,009.60	927.80	0.00	0.00	0.00	
11,500.00	90.00	179.69	7,839.99	-912.35	-1,009.05	1,027.00	0.00	0.00	0.00	
11,600.00	90.00	179.69	7,839.99	-1,012.35	-1,008.50	1,126.21	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,700.00	90.00	179.69	7,839.99	-1,112.35	-1,007.96	1,225.42	0.00	0.00	0.00	
11,800.00	90.00	179.69	7,839.99	-1,212.35	-1,007.41	1,324.63	0.00	0.00	0.00	
11,900.00	90.00	179.69	7,839.99	-1,312.35	-1,006.87	1,423.84	0.00	0.00	0.00	
12,000.00	90.00	179.69	7,839.99	-1,412.35	-1,006.32	1,523.05	0.00	0.00	0.00	
12,100.00	90.00	179.69	7,839.99	-1,512.34	-1,005.77	1,622.25	0.00	0.00	0.00	
12,200.00	90.00	179.69	7,839.99	-1,612.34	-1,005.23	1,721.46	0.00	0.00	0.00	
12,300.00	90.00	179.69	7,839.99	-1,712.34	-1,004.68	1,820.67	0.00	0.00	0.00	
12,400.00	90.00	179.69	7,839.99	-1,812.34	-1,004.14	1,919.88	0.00	0.00	0.00	
12,500.00	90.00	179.69	7,839.99	-1,912.34	-1,003.59	2,019.09	0.00	0.00	0.00	
12,600.00	90.00	179.69	7,839.99	-2,012.34	-1,003.05	2,118.29	0.00	0.00	0.00	
12,700.00	90.00	179.69	7,839.99	-2,112.33	-1,002.50	2,217.50	0.00	0.00	0.00	
12,800.00	90.00	179.69	7,839.99	-2,212.33	-1,001.96	2,316.71	0.00	0.00	0.00	
12,900.00	90.00	179.69	7,839.99	-2,312.33	-1,001.41	2,415.92	0.00	0.00	0.00	
13,000.00	90.00	179.69	7,839.99	-2,412.33	-1,000.87	2,515.13	0.00	0.00	0.00	
13,100.00	90.00	179.69	7,839.99	-2,512.33	-1,000.32	2,614.34	0.00	0.00	0.00	
13,200.00	90.00	179.69	7,839.99	-2,612.33	-999.78	2,713.54	0.00	0.00	0.00	
13,300.00	90.00	179.69	7,839.99	-2,712.33	-999.23	2,812.75	0.00	0.00	0.00	
13,400.00	90.00	179.69	7,839.99	-2,812.32	-998.69	2,911.96	0.00	0.00	0.00	
13,500.00	90.00	179.69	7,839.99	-2,912.32	-998.14	3,011.17	0.00	0.00	0.00	
13,600.00	90.00	179.69	7,839.99	-3,012.32	-997.60	3,110.38	0.00	0.00	0.00	
13,700.00	90.00	179.69	7,839.99	-3,112.32	-997.05	3,209.59	0.00	0.00	0.00	
13,800.00	90.00	179.69	7,839.99	-3,212.32	-996.51	3,308.79	0.00	0.00	0.00	
13,900.00	90.00	179.69	7,839.99	-3,312.32	-995.97	3,408.00	0.00	0.00	0.00	
14,000.00	90.00	179.69	7,839.99	-3,412.32	-995.42	3,507.21	0.00	0.00	0.00	
14,100.00	90.00	179.69	7,839.99	-3,512.31	-994.88	3,606.42	0.00	0.00	0.00	
14,200.00	90.00	179.69	7,839.99	-3,612.31	-994.33	3,705.63	0.00	0.00	0.00	
14,300.00	90.00	179.69	7,839.99	-3,712.31	-993.79	3,804.84	0.00	0.00	0.00	
14,400.00	90.00	179.69	7,839.99	-3,812.31	-993.25	3,904.05	0.00	0.00	0.00	
14,500.00	90.00	179.69	7,839.99	-3,912.31	-992.70	4,003.25	0.00	0.00	0.00	
14,600.00	90.00	179.69	7,839.99	-4,012.31	-992.16	4,102.46	0.00	0.00	0.00	
14,700.00	90.00	179.69	7,839.99	-4,112.31	-991.62	4,201.67	0.00	0.00	0.00	
14,800.00	90.00	179.69	7,839.99	-4,212.30	-991.07	4,300.88	0.00	0.00	0.00	
14,900.00	90.00	179.69	7,839.99	-4,312.30	-990.53	4,400.09	0.00	0.00	0.00	
15,000.00	90.00	179.69	7,839.99	-4,412.30	-989.99	4,499.30	0.00	0.00	0.00	
15,100.00	90.00	179.69	7,839.99	-4,512.30	-989.44	4,598.50	0.00	0.00	0.00	
15,200.00	90.00	179.69	7,839.99	-4,612.30	-988.90	4,697.71	0.00	0.00	0.00	
15,300.00	90.00	179.69	7,839.99	-4,712.30	-988.36	4,796.92	0.00	0.00	0.00	
15,400.00	90.00	179.69	7,839.99	-4,812.30	-987.82	4,896.13	0.00	0.00	0.00	
15,500.00	90.00	179.69	7,839.99	-4,912.29	-987.27	4,995.34	0.00	0.00	0.00	
15,600.00	90.00	179.69	7,839.99	-5,012.29	-986.73	5,094.55	0.00	0.00	0.00	
15,700.00	90.00	179.69	7,839.99	-5,112.29	-986.19	5,193.76	0.00	0.00	0.00	
15,800.00	90.00	179.69	7,839.99	-5,212.29	-985.65	5,292.96	0.00	0.00	0.00	
15,900.00	90.00	179.69	7,839.99	-5,312.29	-985.10	5,392.17	0.00	0.00	0.00	
16,000.00	90.00	179.69	7,839.99	-5,412.29	-984.56	5,491.38	0.00	0.00	0.00	
16,100.00	90.00	179.69	7,839.99	-5,512.28	-984.02	5,590.59	0.00	0.00	0.00	
16,200.00	90.00	179.69	7,839.99	-5,612.28	-983.48	5,689.80	0.00	0.00	0.00	
16,300.00	90.00	179.69	7,839.99	-5,712.28	-982.94	5,789.01	0.00	0.00	0.00	
16,400.00	90.00	179.69	7,839.99	-5,812.28	-982.39	5,888.22	0.00	0.00	0.00	
16,500.00	90.00	179.69	7,839.99	-5,912.28	-981.85	5,987.43	0.00	0.00	0.00	
16,600.00	90.00	179.69	7,839.99	-6,012.28	-981.31	6,086.63	0.00	0.00	0.00	
16,700.00	90.00	179.69	7,839.99	-6,112.28	-980.77	6,185.84	0.00	0.00	0.00	
16,800.00	90.00	179.69	7,839.99	-6,212.27	-980.23	6,285.05	0.00	0.00	0.00	
16,900.00	90.00	179.69	7,839.99	-6,312.27	-979.69	6,384.26	0.00	0.00	0.00	
17,000.00	90.00	179.69	7,839.99	-6,412.27	-979.15	6,483.47	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
17,100.00	90.00	179.69	7,839.99	-6,512.27	-978.61	6,582.68	0.00	0.00	0.00	
17,200.00	90.00	179.69	7,839.99	-6,612.27	-978.06	6,681.89	0.00	0.00	0.00	
17,300.00	90.00	179.69	7,839.99	-6,712.27	-977.52	6,781.10	0.00	0.00	0.00	
17,400.00	90.00	179.69	7,839.99	-6,812.27	-976.98	6,880.30	0.00	0.00	0.00	
17,500.00	90.00	179.69	7,839.99	-6,912.26	-976.44	6,979.51	0.00	0.00	0.00	
17,600.00	90.00	179.69	7,840.00	-7,012.26	-975.90	7,078.72	0.00	0.00	0.00	
17,700.00	90.00	179.69	7,840.00	-7,112.26	-975.36	7,177.93	0.00	0.00	0.00	
17,800.00	90.00	179.69	7,840.00	-7,212.26	-974.82	7,277.14	0.00	0.00	0.00	
17,900.00	90.00	179.69	7,840.00	-7,312.26	-974.28	7,376.35	0.00	0.00	0.00	
18,000.00	90.00	179.69	7,840.00	-7,412.26	-973.74	7,475.56	0.00	0.00	0.00	
18,100.00	90.00	179.69	7,840.00	-7,512.26	-973.20	7,574.77	0.00	0.00	0.00	
18,200.00	90.00	179.69	7,840.00	-7,612.25	-972.66	7,673.98	0.00	0.00	0.00	
18,300.00	90.00	179.69	7,840.00	-7,712.25	-972.12	7,773.18	0.00	0.00	0.00	
18,400.00	90.00	179.69	7,840.00	-7,812.25	-971.58	7,872.39	0.00	0.00	0.00	
18,500.00	90.00	179.69	7,840.00	-7,912.25	-971.04	7,971.60	0.00	0.00	0.00	
18,604.64	90.00	179.69	7,840.00	-8,016.89	-970.48	8,075.42	0.00	0.00	0.00	
TD at 18604.64										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
INTERCHANGE A S16- - plan hits target center - Point	0.00	0.00	7,840.00	1,949.98	-1,024.73	1,238,240.24	3,140,794.98	39° 59' 10.532 N	104° 59' 51.126 W	
INTERCHANGE A S16- - plan hits target center - Point	0.00	0.00	7,840.00	-8,016.89	-970.48	1,228,273.84	3,140,906.12	39° 57' 32.033 N	104° 59' 50.424 W	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
5,286.49	4,915.00	PARKMAN				
5,412.40	5,030.00	SUSSEX				
8,188.61	7,644.00	SHANNON				
8,213.87	7,664.00	NIOBRARA				
8,539.72	7,830.00	NIO B TARGET				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-20N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5261.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5261.00usft
Site:	Sec 10-T1S-R68W	North Reference:	True
Well:	INTERCHANGE A S16-20-20N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Start Build 2.00
1,401.27	1,366.38	228.56	-96.73	Start 5255.02 hold at 1401.27 MD
6,656.29	6,166.12	2,198.92	-930.62	Start Drop -2.00
7,857.56	7,332.50	2,427.48	-1,027.35	Start 30.00 hold at 7857.56 MD
7,887.56	7,362.50	2,427.48	-1,027.35	Start DLS 12.00 TFO 179.69
8,637.62	7,840.00	1,949.98	-1,024.73	Start DLS 0.00 TFO 96.51
18,604.64	7,840.00	-8,016.89	-970.48	TD at 18604.64