

EXTRACTION OIL & GAS

Broomfield County

Sec 10-T1S-R68W

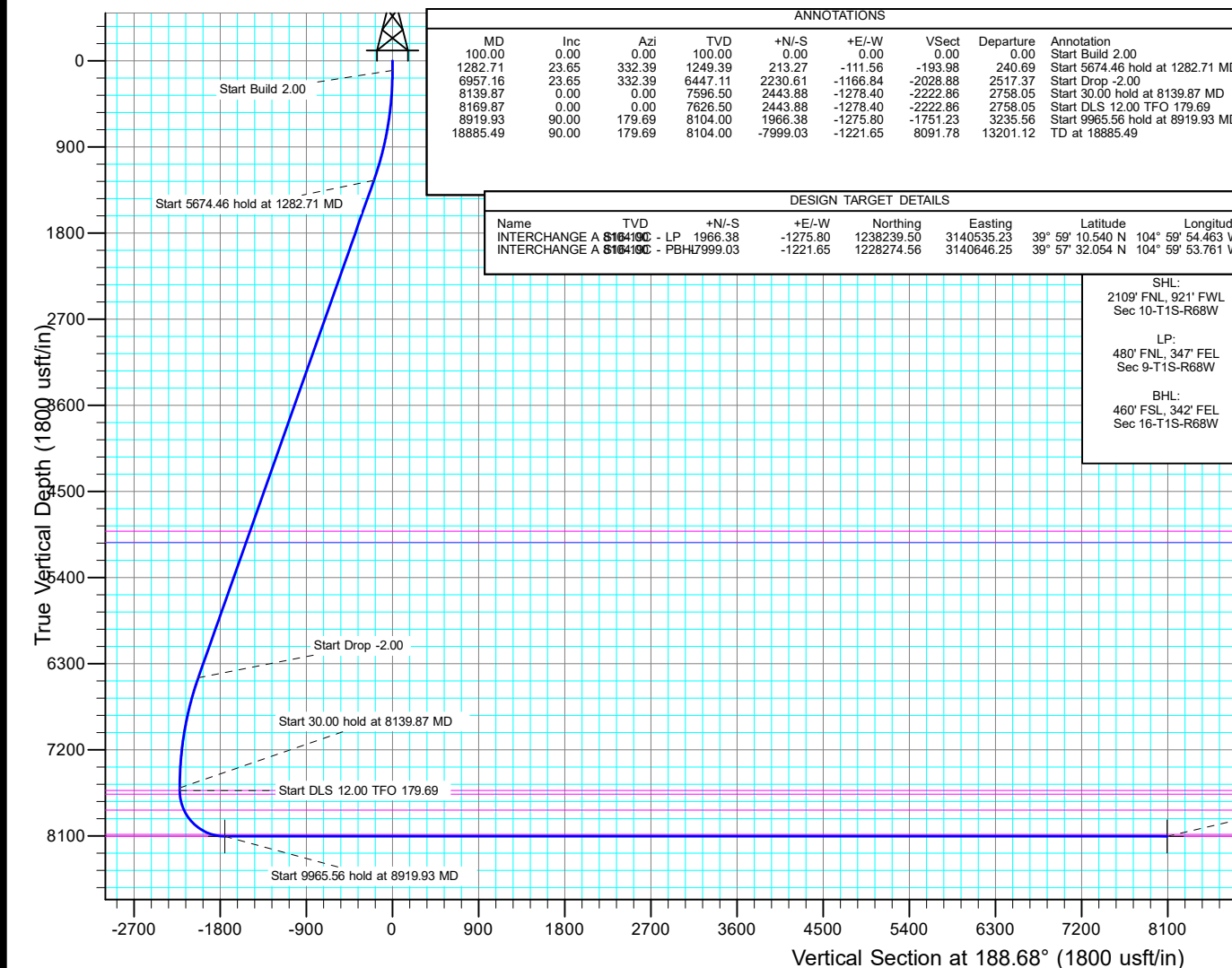
INTERCHANGE A S16-20-19C

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

23 January, 2018



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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 S16-20-19C					
Well Position	+N/-S	-2,115.44 usft	Northing:	1,236,280.43 usft	Latitude:	39° 58' 51.107 N
	+E/-W	929.10 usft	Easting:	3,141,822.23 usft	Longitude:	104° 59' 38.072 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	1/8/2018	8.24	66.47	52,081.98162521

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	188.68

Plan Survey Tool Program	Date	1/23/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,885.05	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,282.71	23.65	332.39	1,249.39	213.27	-111.56	2.00	2.00	0.00	332.39	
6,957.16	23.65	332.39	6,447.11	2,230.61	-1,166.84	0.00	0.00	0.00	0.00	
8,139.87	0.00	0.00	7,596.50	2,443.88	-1,278.40	2.00	-2.00	0.00	180.00	
8,169.87	0.00	0.00	7,626.50	2,443.88	-1,278.40	0.00	0.00	0.00	0.00	
8,919.93	90.00	179.69	8,104.00	1,966.38	-1,275.80	12.00	12.00	23.96	179.69	INTERCHANGE A S1
18,885.49	90.00	179.69	8,104.00	-7,999.03	-1,221.65	0.00	0.00	0.00	0.00	INTERCHANGE A S1

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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
Start Build 2.00									
200.00	2.00	332.39	199.98	1.55	-0.81	-1.41	2.00	2.00	0.00
300.00	4.00	332.39	299.84	6.18	-3.23	-5.62	2.00	2.00	0.00
400.00	6.00	332.39	399.45	13.91	-7.27	-12.65	2.00	2.00	0.00
500.00	8.00	332.39	498.70	24.70	-12.92	-22.47	2.00	2.00	0.00
600.00	10.00	332.39	597.47	38.56	-20.17	-35.08	2.00	2.00	0.00
700.00	12.00	332.39	695.62	55.47	-29.02	-50.45	2.00	2.00	0.00
800.00	14.00	332.39	793.06	75.40	-39.44	-68.58	2.00	2.00	0.00
900.00	16.00	332.39	889.64	98.34	-51.44	-89.44	2.00	2.00	0.00
1,000.00	18.00	332.39	985.27	124.24	-64.99	-113.01	2.00	2.00	0.00
1,100.00	20.00	332.39	1,079.82	153.09	-80.08	-139.24	2.00	2.00	0.00
1,200.00	22.00	332.39	1,173.17	184.84	-96.69	-168.12	2.00	2.00	0.00
1,282.71	23.65	332.39	1,249.39	213.27	-111.56	-193.98	2.00	2.00	0.00
Start 5674.46 hold at 1282.71 MD									
1,300.00	23.65	332.39	1,265.24	219.42	-114.78	-199.58	0.00	0.00	0.00
1,400.00	23.65	332.39	1,356.83	254.97	-133.38	-231.91	0.00	0.00	0.00
1,500.00	23.65	332.39	1,448.43	290.52	-151.97	-264.25	0.00	0.00	0.00
1,600.00	23.65	332.39	1,540.03	326.07	-170.57	-296.58	0.00	0.00	0.00
1,700.00	23.65	332.39	1,631.63	361.62	-189.17	-328.92	0.00	0.00	0.00
1,800.00	23.65	332.39	1,723.23	397.18	-207.76	-361.26	0.00	0.00	0.00
1,900.00	23.65	332.39	1,814.83	432.73	-226.36	-393.59	0.00	0.00	0.00
2,000.00	23.65	332.39	1,906.42	468.28	-244.96	-425.93	0.00	0.00	0.00
2,100.00	23.65	332.39	1,998.02	503.83	-263.55	-458.26	0.00	0.00	0.00
2,200.00	23.65	332.39	2,089.62	539.38	-282.15	-490.60	0.00	0.00	0.00
2,300.00	23.65	332.39	2,181.22	574.93	-300.75	-522.94	0.00	0.00	0.00
2,400.00	23.65	332.39	2,272.82	610.48	-319.35	-555.27	0.00	0.00	0.00
2,500.00	23.65	332.39	2,364.42	646.03	-337.94	-587.61	0.00	0.00	0.00
2,600.00	23.65	332.39	2,456.01	681.59	-356.54	-619.94	0.00	0.00	0.00
2,700.00	23.65	332.39	2,547.61	717.14	-375.14	-652.28	0.00	0.00	0.00
2,800.00	23.65	332.39	2,639.21	752.69	-393.73	-684.62	0.00	0.00	0.00
2,900.00	23.65	332.39	2,730.81	788.24	-412.33	-716.95	0.00	0.00	0.00
3,000.00	23.65	332.39	2,822.41	823.79	-430.93	-749.29	0.00	0.00	0.00
3,100.00	23.65	332.39	2,914.01	859.34	-449.52	-781.62	0.00	0.00	0.00
3,200.00	23.65	332.39	3,005.61	894.89	-468.12	-813.96	0.00	0.00	0.00
3,300.00	23.65	332.39	3,097.20	930.44	-486.72	-846.30	0.00	0.00	0.00
3,400.00	23.65	332.39	3,188.80	965.99	-505.31	-878.63	0.00	0.00	0.00
3,500.00	23.65	332.39	3,280.40	1,001.55	-523.91	-910.97	0.00	0.00	0.00
3,600.00	23.65	332.39	3,372.00	1,037.10	-542.51	-943.31	0.00	0.00	0.00
3,700.00	23.65	332.39	3,463.60	1,072.65	-561.11	-975.64	0.00	0.00	0.00
3,800.00	23.65	332.39	3,555.20	1,108.20	-579.70	-1,007.98	0.00	0.00	0.00
3,900.00	23.65	332.39	3,646.79	1,143.75	-598.30	-1,040.31	0.00	0.00	0.00
4,000.00	23.65	332.39	3,738.39	1,179.30	-616.90	-1,072.65	0.00	0.00	0.00
4,100.00	23.65	332.39	3,829.99	1,214.85	-635.49	-1,104.99	0.00	0.00	0.00
4,200.00	23.65	332.39	3,921.59	1,250.40	-654.09	-1,137.32	0.00	0.00	0.00
4,300.00	23.65	332.39	4,013.19	1,285.96	-672.69	-1,169.66	0.00	0.00	0.00
4,400.00	23.65	332.39	4,104.79	1,321.51	-691.28	-1,201.99	0.00	0.00	0.00
4,500.00	23.65	332.39	4,196.38	1,357.06	-709.88	-1,234.33	0.00	0.00	0.00
4,600.00	23.65	332.39	4,287.98	1,392.61	-728.48	-1,266.67	0.00	0.00	0.00
4,700.00	23.65	332.39	4,379.58	1,428.16	-747.07	-1,299.00	0.00	0.00	0.00
4,800.00	23.65	332.39	4,471.18	1,463.71	-765.67	-1,331.34	0.00	0.00	0.00
4,900.00	23.65	332.39	4,562.78	1,499.26	-784.27	-1,363.67	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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)	
5,000.00	23.65	332.39	4,654.38	1,534.81	-802.87	-1,396.01	0.00	0.00	0.00	
5,100.00	23.65	332.39	4,745.97	1,570.37	-821.46	-1,428.35	0.00	0.00	0.00	
5,200.00	23.65	332.39	4,837.57	1,605.92	-840.06	-1,460.68	0.00	0.00	0.00	
5,284.53	23.65	332.39	4,915.00	1,635.97	-855.78	-1,488.02	0.00	0.00	0.00	
PARKMAN										
5,300.00	23.65	332.39	4,929.17	1,641.47	-858.66	-1,493.02	0.00	0.00	0.00	
5,400.00	23.65	332.39	5,020.77	1,677.02	-877.25	-1,525.35	0.00	0.00	0.00	
5,410.08	23.65	332.39	5,030.00	1,680.60	-879.13	-1,528.61	0.00	0.00	0.00	
SUSSEX										
5,500.00	23.65	332.39	5,112.37	1,712.57	-895.85	-1,557.69	0.00	0.00	0.00	
5,600.00	23.65	332.39	5,203.97	1,748.12	-914.45	-1,590.03	0.00	0.00	0.00	
5,700.00	23.65	332.39	5,295.56	1,783.67	-933.04	-1,622.36	0.00	0.00	0.00	
5,800.00	23.65	332.39	5,387.16	1,819.22	-951.64	-1,654.70	0.00	0.00	0.00	
5,900.00	23.65	332.39	5,478.76	1,854.77	-970.24	-1,687.03	0.00	0.00	0.00	
6,000.00	23.65	332.39	5,570.36	1,890.33	-988.83	-1,719.37	0.00	0.00	0.00	
6,100.00	23.65	332.39	5,661.96	1,925.88	-1,007.43	-1,751.71	0.00	0.00	0.00	
6,200.00	23.65	332.39	5,753.56	1,961.43	-1,026.03	-1,784.04	0.00	0.00	0.00	
6,300.00	23.65	332.39	5,845.16	1,996.98	-1,044.63	-1,816.38	0.00	0.00	0.00	
6,400.00	23.65	332.39	5,936.75	2,032.53	-1,063.22	-1,848.72	0.00	0.00	0.00	
6,500.00	23.65	332.39	6,028.35	2,068.08	-1,081.82	-1,881.05	0.00	0.00	0.00	
6,600.00	23.65	332.39	6,119.95	2,103.63	-1,100.42	-1,913.39	0.00	0.00	0.00	
6,700.00	23.65	332.39	6,211.55	2,139.18	-1,119.01	-1,945.72	0.00	0.00	0.00	
6,800.00	23.65	332.39	6,303.15	2,174.74	-1,137.61	-1,978.06	0.00	0.00	0.00	
6,900.00	23.65	332.39	6,394.75	2,210.29	-1,156.21	-2,010.40	0.00	0.00	0.00	
6,957.16	23.65	332.39	6,447.11	2,230.61	-1,166.84	-2,028.88	0.00	0.00	0.00	
Start Drop -2.00										
7,000.00	22.80	332.39	6,486.47	2,245.58	-1,174.67	-2,042.49	2.00	-2.00	0.00	
7,100.00	20.80	332.39	6,579.32	2,278.48	-1,191.88	-2,072.42	2.00	-2.00	0.00	
7,200.00	18.80	332.39	6,673.40	2,308.49	-1,207.58	-2,099.72	2.00	-2.00	0.00	
7,300.00	16.80	332.39	6,768.61	2,335.57	-1,221.74	-2,124.35	2.00	-2.00	0.00	
7,400.00	14.80	332.39	6,864.83	2,359.69	-1,234.36	-2,146.29	2.00	-2.00	0.00	
7,500.00	12.80	332.39	6,961.94	2,380.82	-1,245.41	-2,165.51	2.00	-2.00	0.00	
7,600.00	10.80	332.39	7,059.82	2,398.94	-1,254.89	-2,181.99	2.00	-2.00	0.00	
7,700.00	8.80	332.39	7,158.36	2,414.02	-1,262.78	-2,195.70	2.00	-2.00	0.00	
7,800.00	6.80	332.39	7,257.43	2,426.04	-1,269.07	-2,206.63	2.00	-2.00	0.00	
7,900.00	4.80	332.39	7,356.91	2,434.99	-1,273.75	-2,214.77	2.00	-2.00	0.00	
8,000.00	2.80	332.39	7,456.69	2,440.86	-1,276.82	-2,220.11	2.00	-2.00	0.00	
8,100.00	0.80	332.39	7,556.63	2,443.63	-1,278.27	-2,222.64	2.00	-2.00	0.00	
8,139.87	0.00	0.00	7,596.50	2,443.88	-1,278.40	-2,222.86	2.00	-2.00	0.00	
Start 30.00 hold at 8139.87 MD										
8,167.37	0.00	0.00	7,624.00	2,443.88	-1,278.40	-2,222.86	0.00	0.00	0.00	
SHANNON										
8,169.87	0.00	0.00	7,626.50	2,443.88	-1,278.40	-2,222.86	0.00	0.00	0.00	
Start DLS 12.00 TFO 179.69										
8,175.00	0.62	179.69	7,631.63	2,443.85	-1,278.40	-2,222.84	12.00	12.00	0.00	
8,200.00	3.62	179.69	7,656.61	2,442.93	-1,278.39	-2,221.92	12.00	12.00	0.00	
8,207.41	4.50	179.69	7,664.00	2,442.41	-1,278.39	-2,221.41	12.00	12.00	0.00	
NIOBRARA										
8,225.00	6.62	179.69	7,681.51	2,440.70	-1,278.38	-2,219.72	12.00	12.00	0.00	
8,250.00	9.62	179.69	7,706.26	2,437.17	-1,278.36	-2,216.24	12.00	12.00	0.00	
8,275.00	12.61	179.69	7,730.78	2,432.35	-1,278.34	-2,211.48	12.00	12.00	0.00	
8,300.00	15.61	179.69	7,755.03	2,426.26	-1,278.30	-2,205.46	12.00	12.00	0.00	
8,325.00	18.61	179.69	7,778.92	2,418.90	-1,278.26	-2,198.19	12.00	12.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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)
8,350.00	21.61	179.69	7,802.39	2,410.31	-1,278.22	-2,189.70	12.00	12.00	0.00
8,375.00	24.61	179.69	7,825.38	2,400.49	-1,278.16	-2,180.01	12.00	12.00	0.00
8,380.09	25.23	179.69	7,830.00	2,398.35	-1,278.15	-2,177.89	12.00	12.00	0.00
NIO B TARGET									
8,400.00	27.61	179.69	7,847.83	2,389.49	-1,278.10	-2,169.14	12.00	12.00	0.00
8,425.00	30.61	179.69	7,869.66	2,377.33	-1,278.04	-2,157.13	12.00	12.00	0.00
8,450.00	33.61	179.69	7,890.84	2,364.04	-1,277.96	-2,144.00	12.00	12.00	0.00
8,475.00	36.61	179.69	7,911.29	2,349.66	-1,277.89	-2,129.80	12.00	12.00	0.00
8,500.00	39.61	179.69	7,930.95	2,334.23	-1,277.80	-2,114.56	12.00	12.00	0.00
8,525.00	42.61	179.69	7,949.79	2,317.80	-1,277.71	-2,098.33	12.00	12.00	0.00
8,550.00	45.61	179.69	7,967.73	2,300.40	-1,277.62	-2,081.14	12.00	12.00	0.00
8,575.00	48.61	179.69	7,984.75	2,282.08	-1,277.52	-2,063.05	12.00	12.00	0.00
8,600.00	51.61	179.69	8,000.78	2,262.90	-1,277.41	-2,044.11	12.00	12.00	0.00
8,625.00	54.61	179.69	8,015.78	2,242.91	-1,277.30	-2,024.36	12.00	12.00	0.00
8,650.00	57.61	179.69	8,029.72	2,222.16	-1,277.19	-2,003.87	12.00	12.00	0.00
8,675.00	60.61	179.69	8,042.55	2,200.71	-1,277.07	-1,982.68	12.00	12.00	0.00
8,700.00	63.61	179.69	8,054.24	2,178.61	-1,276.95	-1,960.86	12.00	12.00	0.00
8,725.00	66.61	179.69	8,064.76	2,155.94	-1,276.83	-1,938.46	12.00	12.00	0.00
8,750.00	69.61	179.69	8,074.08	2,132.74	-1,276.70	-1,915.55	12.00	12.00	0.00
8,775.00	72.61	179.69	8,082.18	2,109.09	-1,276.57	-1,892.19	12.00	12.00	0.00
8,777.78	72.94	179.69	8,083.00	2,106.44	-1,276.56	-1,889.56	12.00	12.00	0.00
FORT HAYS									
8,800.00	75.61	179.69	8,089.02	2,085.05	-1,276.44	-1,868.44	12.00	12.00	0.00
8,825.00	78.61	179.69	8,094.60	2,060.69	-1,276.31	-1,844.38	12.00	12.00	0.00
8,850.00	81.61	179.69	8,098.89	2,036.06	-1,276.18	-1,820.05	12.00	12.00	0.00
8,875.00	84.61	179.69	8,101.89	2,011.24	-1,276.04	-1,795.54	12.00	12.00	0.00
8,900.00	87.61	179.69	8,103.58	1,986.30	-1,275.90	-1,770.91	12.00	12.00	0.00
8,919.93	90.00	179.69	8,104.00	1,966.38	-1,275.80	-1,751.23	12.00	12.00	0.00
Start 9965.56 hold at 8919.93 MD - CODELL									
9,000.00	90.00	179.69	8,104.00	1,886.31	-1,275.36	-1,672.15	0.00	0.00	0.00
9,100.00	90.00	179.69	8,104.00	1,786.31	-1,274.81	-1,573.38	0.00	0.00	0.00
9,200.00	90.00	179.69	8,104.00	1,686.31	-1,274.27	-1,474.61	0.00	0.00	0.00
9,300.00	90.00	179.69	8,104.00	1,586.32	-1,273.72	-1,375.84	0.00	0.00	0.00
9,400.00	90.00	179.69	8,104.00	1,486.32	-1,273.18	-1,277.07	0.00	0.00	0.00
9,500.00	90.00	179.69	8,104.00	1,386.32	-1,272.63	-1,178.30	0.00	0.00	0.00
9,600.00	90.00	179.69	8,104.00	1,286.32	-1,272.09	-1,079.53	0.00	0.00	0.00
9,700.00	90.00	179.69	8,104.00	1,186.32	-1,271.54	-980.76	0.00	0.00	0.00
9,800.00	90.00	179.69	8,103.99	1,086.32	-1,271.00	-881.99	0.00	0.00	0.00
9,900.00	90.00	179.69	8,103.99	986.33	-1,270.45	-783.22	0.00	0.00	0.00
10,000.00	90.00	179.69	8,103.99	886.33	-1,269.91	-684.45	0.00	0.00	0.00
10,100.00	90.00	179.69	8,103.99	786.33	-1,269.36	-585.68	0.00	0.00	0.00
10,200.00	90.00	179.69	8,103.99	686.33	-1,268.82	-486.91	0.00	0.00	0.00
10,300.00	90.00	179.69	8,103.99	586.33	-1,268.27	-388.14	0.00	0.00	0.00
10,400.00	90.00	179.69	8,103.99	486.33	-1,267.73	-289.37	0.00	0.00	0.00
10,500.00	90.00	179.69	8,103.99	386.33	-1,267.18	-190.60	0.00	0.00	0.00
10,600.00	90.00	179.69	8,103.99	286.34	-1,266.64	-91.83	0.00	0.00	0.00
10,700.00	90.00	179.69	8,103.99	186.34	-1,266.09	6.94	0.00	0.00	0.00
10,800.00	90.00	179.69	8,103.99	86.34	-1,265.54	105.71	0.00	0.00	0.00
10,900.00	90.00	179.69	8,103.99	-13.66	-1,265.00	204.48	0.00	0.00	0.00
11,000.00	90.00	179.69	8,103.99	-113.66	-1,264.45	303.25	0.00	0.00	0.00
11,100.00	90.00	179.69	8,103.99	-213.66	-1,263.91	402.02	0.00	0.00	0.00
11,200.00	90.00	179.69	8,103.99	-313.66	-1,263.36	500.79	0.00	0.00	0.00
11,300.00	90.00	179.69	8,103.99	-413.65	-1,262.82	599.56	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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)
11,400.00	90.00	179.69	8,103.99	-513.65	-1,262.27	698.33	0.00	0.00	0.00
11,500.00	90.00	179.69	8,103.98	-613.65	-1,261.73	797.10	0.00	0.00	0.00
11,600.00	90.00	179.69	8,103.98	-713.65	-1,261.18	895.87	0.00	0.00	0.00
11,700.00	90.00	179.69	8,103.98	-813.65	-1,260.64	994.64	0.00	0.00	0.00
11,800.00	90.00	179.69	8,103.98	-913.65	-1,260.09	1,093.41	0.00	0.00	0.00
11,900.00	90.00	179.69	8,103.98	-1,013.64	-1,259.55	1,192.18	0.00	0.00	0.00
12,000.00	90.00	179.69	8,103.98	-1,113.64	-1,259.00	1,290.95	0.00	0.00	0.00
12,100.00	90.00	179.69	8,103.98	-1,213.64	-1,258.46	1,389.72	0.00	0.00	0.00
12,200.00	90.00	179.69	8,103.98	-1,313.64	-1,257.91	1,488.49	0.00	0.00	0.00
12,300.00	90.00	179.69	8,103.98	-1,413.64	-1,257.37	1,587.26	0.00	0.00	0.00
12,400.00	90.00	179.69	8,103.98	-1,513.64	-1,256.82	1,686.03	0.00	0.00	0.00
12,500.00	90.00	179.69	8,103.98	-1,613.64	-1,256.27	1,784.80	0.00	0.00	0.00
12,600.00	90.00	179.69	8,103.98	-1,713.63	-1,255.73	1,883.57	0.00	0.00	0.00
12,700.00	90.00	179.69	8,103.98	-1,813.63	-1,255.18	1,982.34	0.00	0.00	0.00
12,800.00	90.00	179.69	8,103.98	-1,913.63	-1,254.64	2,081.11	0.00	0.00	0.00
12,900.00	90.00	179.69	8,103.98	-2,013.63	-1,254.09	2,179.88	0.00	0.00	0.00
13,000.00	90.00	179.69	8,103.98	-2,113.63	-1,253.55	2,278.65	0.00	0.00	0.00
13,100.00	90.00	179.69	8,103.98	-2,213.63	-1,253.00	2,377.42	0.00	0.00	0.00
13,200.00	90.00	179.69	8,103.97	-2,313.63	-1,252.46	2,476.19	0.00	0.00	0.00
13,300.00	90.00	179.69	8,103.97	-2,413.62	-1,251.91	2,574.96	0.00	0.00	0.00
13,400.00	90.00	179.69	8,103.97	-2,513.62	-1,251.37	2,673.73	0.00	0.00	0.00
13,500.00	90.00	179.69	8,103.97	-2,613.62	-1,250.82	2,772.50	0.00	0.00	0.00
13,600.00	90.00	179.69	8,103.97	-2,713.62	-1,250.28	2,871.27	0.00	0.00	0.00
13,700.00	90.00	179.69	8,103.97	-2,813.62	-1,249.73	2,970.04	0.00	0.00	0.00
13,800.00	90.00	179.69	8,103.97	-2,913.62	-1,249.19	3,068.81	0.00	0.00	0.00
13,900.00	90.00	179.69	8,103.97	-3,013.62	-1,248.64	3,167.58	0.00	0.00	0.00
14,000.00	90.00	179.69	8,103.97	-3,113.61	-1,248.10	3,266.35	0.00	0.00	0.00
14,100.00	90.00	179.69	8,103.97	-3,213.61	-1,247.55	3,365.12	0.00	0.00	0.00
14,200.00	90.00	179.69	8,103.97	-3,313.61	-1,247.01	3,463.89	0.00	0.00	0.00
14,300.00	90.00	179.69	8,103.97	-3,413.61	-1,246.46	3,562.66	0.00	0.00	0.00
14,400.00	90.00	179.69	8,103.97	-3,513.61	-1,245.91	3,661.43	0.00	0.00	0.00
14,500.00	90.00	179.69	8,103.97	-3,613.61	-1,245.37	3,760.20	0.00	0.00	0.00
14,600.00	90.00	179.69	8,103.97	-3,713.60	-1,244.82	3,858.97	0.00	0.00	0.00
14,700.00	90.00	179.69	8,103.97	-3,813.60	-1,244.28	3,957.74	0.00	0.00	0.00
14,800.00	90.00	179.69	8,103.97	-3,913.60	-1,243.73	4,056.51	0.00	0.00	0.00
14,900.00	90.00	179.69	8,103.96	-4,013.60	-1,243.19	4,155.28	0.00	0.00	0.00
15,000.00	90.00	179.69	8,103.96	-4,113.60	-1,242.64	4,254.05	0.00	0.00	0.00
15,100.00	90.00	179.69	8,103.96	-4,213.60	-1,242.10	4,352.82	0.00	0.00	0.00
15,200.00	90.00	179.69	8,103.96	-4,313.60	-1,241.55	4,451.59	0.00	0.00	0.00
15,300.00	90.00	179.69	8,103.96	-4,413.59	-1,241.01	4,550.36	0.00	0.00	0.00
15,400.00	90.00	179.69	8,103.96	-4,513.59	-1,240.46	4,649.13	0.00	0.00	0.00
15,500.00	90.00	179.69	8,103.96	-4,613.59	-1,239.92	4,747.90	0.00	0.00	0.00
15,600.00	90.00	179.69	8,103.96	-4,713.59	-1,239.37	4,846.67	0.00	0.00	0.00
15,700.00	90.00	179.69	8,103.96	-4,813.59	-1,238.83	4,945.44	0.00	0.00	0.00
15,800.00	90.00	179.69	8,103.96	-4,913.59	-1,238.28	5,044.21	0.00	0.00	0.00
15,900.00	90.00	179.69	8,103.96	-5,013.59	-1,237.74	5,142.98	0.00	0.00	0.00
16,000.00	90.00	179.69	8,103.96	-5,113.58	-1,237.19	5,241.75	0.00	0.00	0.00
16,100.00	90.00	179.69	8,103.96	-5,213.58	-1,236.64	5,340.52	0.00	0.00	0.00
16,200.00	90.00	179.69	8,103.96	-5,313.58	-1,236.10	5,439.29	0.00	0.00	0.00
16,300.00	90.00	179.69	8,103.96	-5,413.58	-1,235.55	5,538.06	0.00	0.00	0.00
16,400.00	90.00	179.69	8,103.96	-5,513.58	-1,235.01	5,636.83	0.00	0.00	0.00
16,500.00	90.00	179.69	8,103.96	-5,613.58	-1,234.46	5,735.60	0.00	0.00	0.00
16,600.00	90.00	179.69	8,103.95	-5,713.58	-1,233.92	5,834.37	0.00	0.00	0.00
16,700.00	90.00	179.69	8,103.95	-5,813.57	-1,233.37	5,933.14	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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)	
16,800.00	90.00	179.69	8,103.95	-5,913.57	-1,232.83	6,031.91	0.00	0.00	0.00	
16,900.00	90.00	179.69	8,103.95	-6,013.57	-1,232.28	6,130.68	0.00	0.00	0.00	
17,000.00	90.00	179.69	8,103.95	-6,113.57	-1,231.74	6,229.45	0.00	0.00	0.00	
17,100.00	90.00	179.69	8,103.95	-6,213.57	-1,231.19	6,328.22	0.00	0.00	0.00	
17,200.00	90.00	179.69	8,103.95	-6,313.57	-1,230.65	6,426.99	0.00	0.00	0.00	
17,300.00	90.00	179.69	8,103.95	-6,413.56	-1,230.10	6,525.76	0.00	0.00	0.00	
17,400.00	90.00	179.69	8,103.95	-6,513.56	-1,229.56	6,624.53	0.00	0.00	0.00	
17,500.00	90.00	179.69	8,103.95	-6,613.56	-1,229.01	6,723.30	0.00	0.00	0.00	
17,600.00	90.00	179.69	8,103.95	-6,713.56	-1,228.47	6,822.07	0.00	0.00	0.00	
17,700.00	90.00	179.69	8,103.95	-6,813.56	-1,227.92	6,920.84	0.00	0.00	0.00	
17,800.00	90.00	179.69	8,103.95	-6,913.56	-1,227.37	7,019.61	0.00	0.00	0.00	
17,900.00	90.00	179.69	8,103.95	-7,013.56	-1,226.83	7,118.38	0.00	0.00	0.00	
18,000.00	90.00	179.69	8,103.95	-7,113.55	-1,226.28	7,217.15	0.00	0.00	0.00	
18,100.00	90.00	179.69	8,103.95	-7,213.55	-1,225.74	7,315.92	0.00	0.00	0.00	
18,200.00	90.00	179.69	8,103.95	-7,313.55	-1,225.19	7,414.69	0.00	0.00	0.00	
18,300.00	90.00	179.69	8,103.94	-7,413.55	-1,224.65	7,513.46	0.00	0.00	0.00	
18,400.00	90.00	179.69	8,103.94	-7,513.55	-1,224.10	7,612.23	0.00	0.00	0.00	
18,500.00	90.00	179.69	8,103.94	-7,613.55	-1,223.56	7,711.00	0.00	0.00	0.00	
18,600.00	90.00	179.69	8,103.94	-7,713.55	-1,223.01	7,809.77	0.00	0.00	0.00	
18,700.00	90.00	179.69	8,103.94	-7,813.54	-1,222.47	7,908.54	0.00	0.00	0.00	
18,800.00	90.00	179.69	8,103.94	-7,913.54	-1,221.92	8,007.31	0.00	0.00	0.00	
18,885.49	90.00	179.69	8,104.00	-7,999.03	-1,221.65	8,091.78	0.00	0.00	0.00	
TD at 18885.49										

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-'	0.00	0.00	8,104.00	1,966.38	-1,275.80	1,238,239.50	3,140,535.23	39° 59' 10.540 N	104° 59' 54.463 W	
- plan hits target center										
- Point										
INTERCHANGE A S16-'	0.00	0.00	8,104.00	-7,999.03	-1,221.65	1,228,274.56	3,140,646.25	39° 57' 32.054 N	104° 59' 53.761 W	
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
5,284.53	4,915.00	PARKMAN				
5,410.08	5,030.00	SUSSEX				
8,167.37	7,624.00	SHANNON				
8,207.41	7,664.00	NIOBRARA				
8,380.09	7,830.00	NIO B TARGET				
8,777.78	8,083.00	FORT HAYS				
8,919.93	8,104.00	CODELL				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well INTERCHANGE A S16-20-19C
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 S16-20-19C	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)	
100.00	100.00	0.00	0.00	Start Build 2.00
1,282.71	1,249.39	213.27	-111.56	Start 5674.46 hold at 1282.71 MD
6,957.16	6,447.11	2,230.61	-1,166.84	Start Drop -2.00
8,139.87	7,596.50	2,443.88	-1,278.40	Start 30.00 hold at 8139.87 MD
8,169.87	7,626.50	2,443.88	-1,278.40	Start DLS 12.00 TFO 179.69
8,919.93	8,104.00	1,966.38	-1,275.80	Start 9965.56 hold at 8919.93 MD
18,885.49	8,104.00	-7,999.03	-1,221.65	TD at 18885.49