

# **EXTRACTION OIL & GAS**

**Broomfield County**

**Sec 10-T1S-R68W**

**INTERCHANGE A S22-30-2N**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**23 January, 2018**



Project: Broomfield County  
Site: Sec 10-T1S-R68W  
Well: INTERCHANGE A S22-30-2N  
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: 52081.6snT  
Dip Angle: 66.47°  
Date: 1/9/2018  
Model: IGRF2015

WELL DETAILS: INTERCHANGE A S22-30-2N

+N/-S	+E/-W	Northing	Easting	5236.00	Latitude	Longitude	Slot
0.00	0.00	1236217.21	3141787.84		39° 58' 50.484 N	104° 59' 38.519 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	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1709.20	24.18	353.52	1673.81	249.82	-28.37	2.00	353.52	-249.43	
4	6626.00	24.18	353.52	6158.89	2251.23	-255.63	0.00	0.00	-2247.62	
5	7835.20	0.00	0.00	7332.50	2501.05	-284.00	2.00	180.00	-2497.05	
6	7865.20	0.00	0.00	7362.50	2501.05	-284.00	0.00	0.00	-2497.05	
7	8615.26	90.00	180.00	7840.00	2023.55	-283.96	12.00	180.00	-2019.59	INTERCHANGE A S22-2N - LP
8	13615.26	90.00	180.00	7839.98	-2976.45	-283.54	0.00	0.00	2979.96	
9	13715.50	90.00	182.00	7839.98	-3076.67	-285.29	2.00	90.01	3080.19	
10	13865.50	90.00	182.00	7839.98	-3226.58	-290.52	0.00	0.00	3230.16	
11	13999.16	90.00	179.33	7839.98	-3360.22	-292.07	2.00	-90.00	3363.81	INTERCHANGE A S22-2N - PBHL
12	23870.72	90.00	179.33	7840.00	-13231.10	-176.08	0.00	0.00	13232.27	INTERCHANGE A S22-2N - PBHL

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
4915.00	5262.44	PARKMAN
5030.00	5388.50	SUSSEX
7624.00	8141.93	SHANNON
7664.00	8191.51	NIORARA
7830.00	8517.36	NIO B TARGET

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	Start Build 2.00
1709.20	24.18	353.52	1673.81	249.82	-28.37	-249.43	251.43	Start 4916.80 hold at 1709.20 MD
6626.00	24.18	353.52	6158.89	2251.23	-255.63	-2247.62	2265.69	Start Drop -2.00
7835.20	0.00	0.00	7332.50	2501.05	-284.00	-2497.05	2517.12	Start 30.00 hold at 7835.20 MD
7865.20	0.00	0.00	7362.50	2501.05	-284.00	-2497.05	2517.12	Start DLS 12.00 TFO 180.00
8615.26	90.00	180.00	7840.00	2023.55	-283.96	-2019.59	2994.62	Start 5000.00 hold at 8615.26 MD
13615.26	90.00	180.00	7839.98	-2976.45	-283.54	2979.96	7994.62	Start DLS 2.00 TFO 90.01
13715.50	90.00	182.00	7839.98	-3076.67	-285.29	3080.19	8094.86	Start 150.00 hold at 13715.50 MD
13865.50	90.00	182.00	7839.98	-3226.58	-290.52	3230.16	8244.86	Start Turn -2.00
13999.16	90.00	179.33	7839.98	-3360.22	-292.07	3363.81	8378.53	Start 9871.56 hold at 13999.16 MD
23870.72	90.00	179.33	7840.00	-13231.10	-176.08	13232.27	18250.09	TD at 23870.72

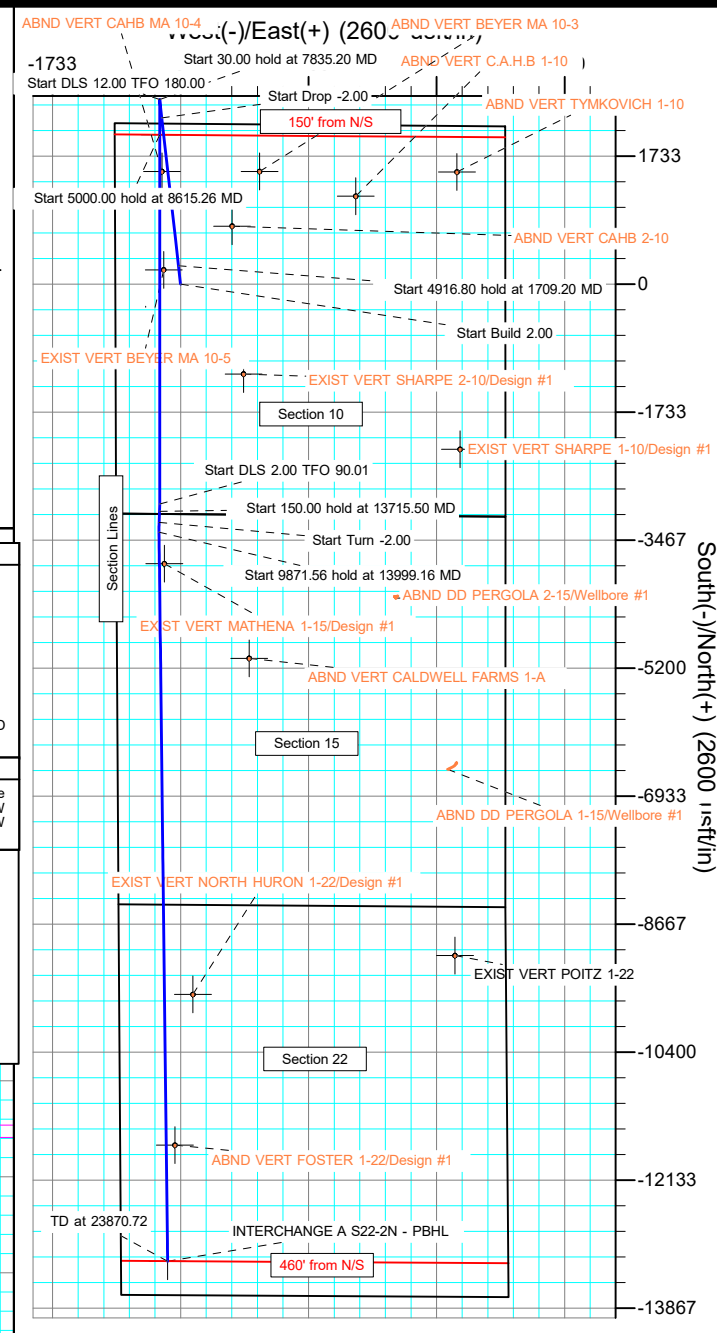
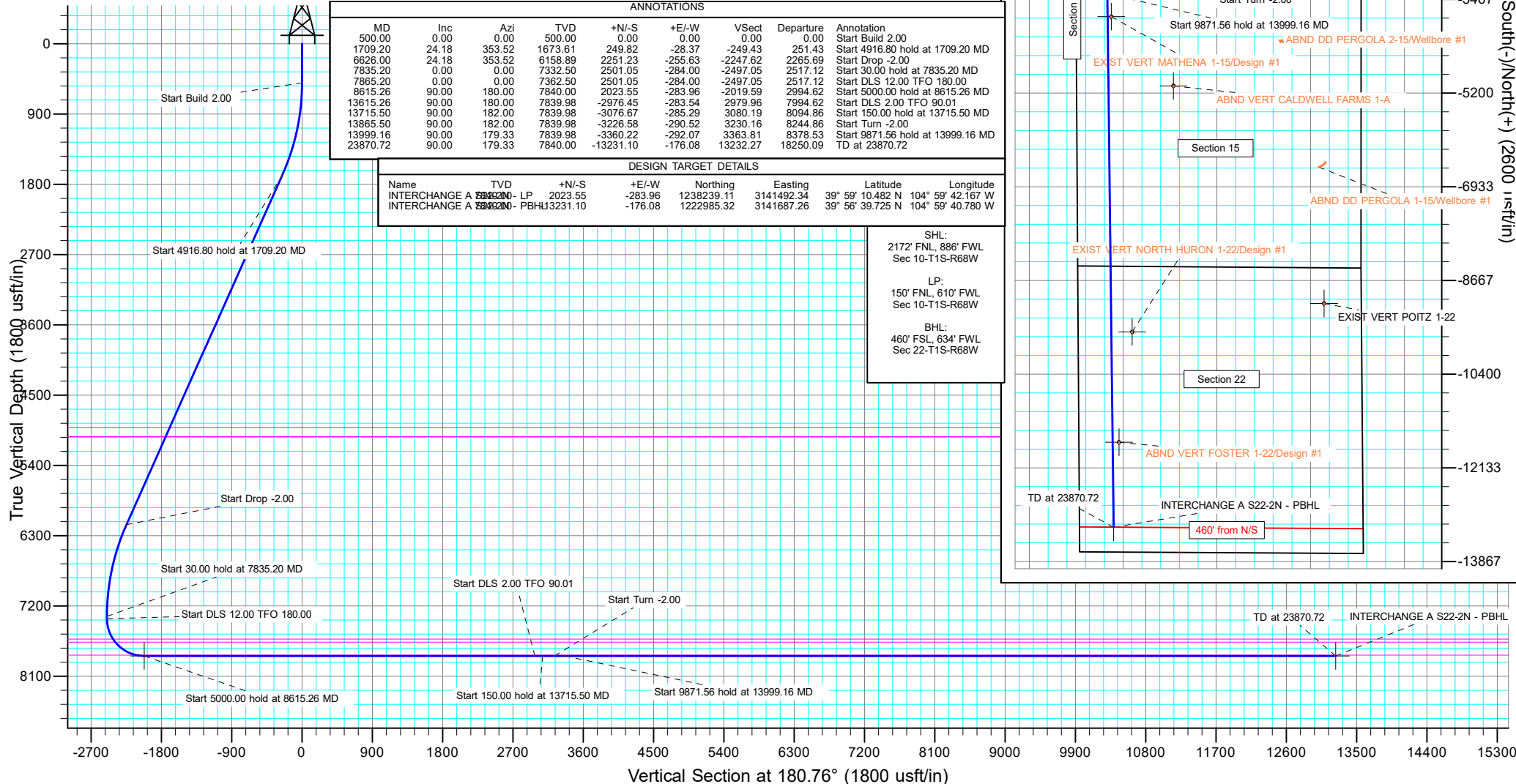
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
INTERCHANGE A S22-2N - LP	2023.55	-283.96	1238239.11	3141492.34	39° 59' 10.482 N	104° 59' 42.167 W	
INTERCHANGE A S22-2N - PBHL	13231.10	-176.08	1222985.32	3141687.26	39° 56' 39.725 N	104° 59' 40.780 W	

SHL:  
2172' FNL, 886' FWL  
Sec 10-T1S-R68W

LP:  
150' FNL, 610' FWL  
Sec 10-T1S-R68W

BHL:  
460' FSL, 634' FWL  
Sec 22-T1S-R68W



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	Broomfield County		
<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		

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 S22-30-2N					
Well Position	+N/-S	-2,178.46 usft	Northing:	1,236,217.21 usft	Latitude:	39° 58' 50.484 N
	+E/-W	894.35 usft	Easting:	3,141,787.84 usft	Longitude:	104° 59' 38.519 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,236.00 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	1/9/2018	8.24	66.47	52,081.56474341

<b>Design</b>	PROPOSAL 1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.76	

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/23/2018			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	23,870.72	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG	
			OWSG MWD - Standard		

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,709.20	24.18	353.52	1,673.61	249.82	-28.37	2.00	2.00	0.00	353.52	
6,626.00	24.18	353.52	6,158.89	2,251.23	-255.63	0.00	0.00	0.00	0.00	
7,835.20	0.00	0.00	7,332.50	2,501.05	-284.00	2.00	-2.00	0.00	180.00	
7,865.20	0.00	0.00	7,362.50	2,501.05	-284.00	0.00	0.00	0.00	0.00	
8,615.26	90.00	180.00	7,840.00	2,023.55	-283.96	12.00	12.00	24.00	180.00	INTERCHANGE A S2
13,615.26	90.00	180.00	7,839.98	-2,976.45	-283.54	0.00	0.00	0.00	0.00	
13,715.50	90.00	182.00	7,839.98	-3,076.67	-285.29	2.00	0.00	2.00	90.01	
13,865.50	90.00	182.00	7,839.98	-3,226.58	-290.52	0.00	0.00	0.00	0.00	
13,999.16	90.00	179.33	7,839.98	-3,360.22	-292.07	2.00	0.00	-2.00	-90.00	INTERCHANGE A S2
23,870.72	90.00	179.33	7,840.00	-13,231.10	-176.08	0.00	0.00	0.00	0.00	INTERCHANGE A S2

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
600.00	2.00	353.52	599.98	1.73	-0.20	-1.73	2.00	2.00	0.00
700.00	4.00	353.52	699.84	6.93	-0.79	-6.92	2.00	2.00	0.00
800.00	6.00	353.52	799.45	15.59	-1.77	-15.57	2.00	2.00	0.00
900.00	8.00	353.52	898.70	27.70	-3.15	-27.66	2.00	2.00	0.00
1,000.00	10.00	353.52	997.47	43.24	-4.91	-43.18	2.00	2.00	0.00
1,100.00	12.00	353.52	1,095.62	62.20	-7.06	-62.10	2.00	2.00	0.00
1,200.00	14.00	353.52	1,193.06	84.55	-9.60	-84.42	2.00	2.00	0.00
1,300.00	16.00	353.52	1,289.64	110.27	-12.52	-110.09	2.00	2.00	0.00
1,400.00	18.00	353.52	1,385.27	139.32	-15.82	-139.09	2.00	2.00	0.00
1,500.00	20.00	353.52	1,479.82	171.67	-19.49	-171.39	2.00	2.00	0.00
1,600.00	22.00	353.52	1,573.17	207.27	-23.54	-206.94	2.00	2.00	0.00
1,709.20	24.18	353.52	1,673.61	249.82	-28.37	-249.43	2.00	2.00	0.00
Start 4916.80 hold at 1709.20 MD									
1,800.00	24.18	353.52	1,756.44	286.78	-32.57	-286.33	0.00	0.00	0.00
1,900.00	24.18	353.52	1,847.67	327.49	-37.19	-326.97	0.00	0.00	0.00
2,000.00	24.18	353.52	1,938.89	368.20	-41.81	-367.61	0.00	0.00	0.00
2,100.00	24.18	353.52	2,030.11	408.90	-46.43	-408.25	0.00	0.00	0.00
2,200.00	24.18	353.52	2,121.34	449.61	-51.05	-448.89	0.00	0.00	0.00
2,300.00	24.18	353.52	2,212.56	490.31	-55.68	-489.53	0.00	0.00	0.00
2,400.00	24.18	353.52	2,303.78	531.02	-60.30	-530.17	0.00	0.00	0.00
2,500.00	24.18	353.52	2,395.01	571.72	-64.92	-570.81	0.00	0.00	0.00
2,600.00	24.18	353.52	2,486.23	612.43	-69.54	-611.45	0.00	0.00	0.00
2,700.00	24.18	353.52	2,577.45	653.13	-74.16	-652.09	0.00	0.00	0.00
2,800.00	24.18	353.52	2,668.68	693.84	-78.79	-692.73	0.00	0.00	0.00
2,900.00	24.18	353.52	2,759.90	734.54	-83.41	-733.37	0.00	0.00	0.00
3,000.00	24.18	353.52	2,851.12	775.25	-88.03	-774.01	0.00	0.00	0.00
3,100.00	24.18	353.52	2,942.35	815.95	-92.65	-814.65	0.00	0.00	0.00
3,200.00	24.18	353.52	3,033.57	856.66	-97.28	-855.29	0.00	0.00	0.00
3,300.00	24.18	353.52	3,124.80	897.37	-101.90	-895.93	0.00	0.00	0.00
3,400.00	24.18	353.52	3,216.02	938.07	-106.52	-936.57	0.00	0.00	0.00
3,500.00	24.18	353.52	3,307.24	978.78	-111.14	-977.21	0.00	0.00	0.00
3,600.00	24.18	353.52	3,398.47	1,019.48	-115.76	-1,017.85	0.00	0.00	0.00
3,700.00	24.18	353.52	3,489.69	1,060.19	-120.39	-1,058.49	0.00	0.00	0.00
3,800.00	24.18	353.52	3,580.91	1,100.89	-125.01	-1,099.13	0.00	0.00	0.00
3,900.00	24.18	353.52	3,672.14	1,141.60	-129.63	-1,139.77	0.00	0.00	0.00
4,000.00	24.18	353.52	3,763.36	1,182.30	-134.25	-1,180.41	0.00	0.00	0.00
4,100.00	24.18	353.52	3,854.58	1,223.01	-138.88	-1,221.05	0.00	0.00	0.00
4,200.00	24.18	353.52	3,945.81	1,263.71	-143.50	-1,261.69	0.00	0.00	0.00
4,300.00	24.18	353.52	4,037.03	1,304.42	-148.12	-1,302.33	0.00	0.00	0.00
4,400.00	24.18	353.52	4,128.25	1,345.12	-152.74	-1,342.97	0.00	0.00	0.00
4,500.00	24.18	353.52	4,219.48	1,385.83	-157.36	-1,383.61	0.00	0.00	0.00
4,600.00	24.18	353.52	4,310.70	1,426.53	-161.99	-1,424.25	0.00	0.00	0.00
4,700.00	24.18	353.52	4,401.92	1,467.24	-166.61	-1,464.89	0.00	0.00	0.00
4,800.00	24.18	353.52	4,493.15	1,507.95	-171.23	-1,505.53	0.00	0.00	0.00
4,900.00	24.18	353.52	4,584.37	1,548.65	-175.85	-1,546.17	0.00	0.00	0.00
5,000.00	24.18	353.52	4,675.59	1,589.36	-180.48	-1,586.81	0.00	0.00	0.00
5,100.00	24.18	353.52	4,766.82	1,630.06	-185.10	-1,627.45	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
5,200.00	24.18	353.52	4,858.04	1,670.77	-189.72	-1,668.09	0.00	0.00	0.00
5,262.44	24.18	353.52	4,915.00	1,696.18	-192.61	-1,693.47	0.00	0.00	0.00
<b>PARKMAN</b>									
5,300.00	24.18	353.52	4,949.26	1,711.47	-194.34	-1,708.73	0.00	0.00	0.00
5,388.50	24.18	353.52	5,030.00	1,747.50	-198.43	-1,744.70	0.00	0.00	0.00
<b>SUSSEX</b>									
5,400.00	24.18	353.52	5,040.49	1,752.18	-198.96	-1,749.38	0.00	0.00	0.00
5,500.00	24.18	353.52	5,131.71	1,792.88	-203.59	-1,790.02	0.00	0.00	0.00
5,600.00	24.18	353.52	5,222.93	1,833.59	-208.21	-1,830.66	0.00	0.00	0.00
5,700.00	24.18	353.52	5,314.16	1,874.29	-212.83	-1,871.30	0.00	0.00	0.00
5,800.00	24.18	353.52	5,405.38	1,915.00	-217.45	-1,911.94	0.00	0.00	0.00
5,900.00	24.18	353.52	5,496.60	1,955.70	-222.07	-1,952.58	0.00	0.00	0.00
6,000.00	24.18	353.52	5,587.83	1,996.41	-226.70	-1,993.22	0.00	0.00	0.00
6,100.00	24.18	353.52	5,679.05	2,037.11	-231.32	-2,033.86	0.00	0.00	0.00
6,200.00	24.18	353.52	5,770.27	2,077.82	-235.94	-2,074.50	0.00	0.00	0.00
6,300.00	24.18	353.52	5,861.50	2,118.53	-240.56	-2,115.14	0.00	0.00	0.00
6,400.00	24.18	353.52	5,952.72	2,159.23	-245.19	-2,155.78	0.00	0.00	0.00
6,500.00	24.18	353.52	6,043.94	2,199.94	-249.81	-2,196.42	0.00	0.00	0.00
6,600.00	24.18	353.52	6,135.17	2,240.64	-254.43	-2,237.06	0.00	0.00	0.00
6,626.00	24.18	353.52	6,158.89	2,251.23	-255.63	-2,247.62	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
6,700.00	22.70	353.52	6,226.78	2,280.48	-258.95	-2,276.83	2.00	-2.00	0.00
6,800.00	20.70	353.52	6,319.68	2,317.22	-263.13	-2,313.51	2.00	-2.00	0.00
6,900.00	18.70	353.52	6,413.82	2,350.72	-266.93	-2,346.96	2.00	-2.00	0.00
7,000.00	16.70	353.52	6,509.08	2,380.93	-270.36	-2,377.13	2.00	-2.00	0.00
7,100.00	14.70	353.52	6,605.34	2,407.83	-273.41	-2,403.98	2.00	-2.00	0.00
7,200.00	12.70	353.52	6,702.49	2,431.37	-276.09	-2,427.48	2.00	-2.00	0.00
7,300.00	10.70	353.52	6,800.41	2,451.52	-278.38	-2,447.60	2.00	-2.00	0.00
7,400.00	8.70	353.52	6,898.97	2,468.27	-280.28	-2,464.32	2.00	-2.00	0.00
7,500.00	6.70	353.52	6,998.06	2,481.59	-281.79	-2,477.62	2.00	-2.00	0.00
7,600.00	4.70	353.52	7,097.56	2,491.46	-282.91	-2,487.48	2.00	-2.00	0.00
7,700.00	2.70	353.52	7,197.35	2,497.88	-283.64	-2,493.89	2.00	-2.00	0.00
7,800.00	0.70	353.52	7,297.30	2,500.84	-283.98	-2,496.84	2.00	-2.00	0.00
7,835.20	0.00	0.00	7,332.50	2,501.05	-284.00	-2,497.05	2.00	-2.00	18.40
<b>Start 30.00 hold at 7835.20 MD</b>									
7,865.20	0.00	0.00	7,362.50	2,501.05	-284.00	-2,497.05	0.00	0.00	0.00
<b>Start DLS 12.00 TFO 180.00</b>									
7,875.00	1.18	180.00	7,372.30	2,500.95	-284.00	-2,496.95	12.00	12.00	0.00
7,900.00	4.18	180.00	7,397.27	2,499.78	-284.00	-2,495.78	12.00	12.00	0.00
7,925.00	7.18	180.00	7,422.14	2,497.31	-284.00	-2,493.31	12.00	12.00	0.00
7,950.00	10.18	180.00	7,446.85	2,493.54	-284.00	-2,489.54	12.00	12.00	0.00
7,975.00	13.17	180.00	7,471.33	2,488.48	-284.00	-2,484.48	12.00	12.00	0.00
8,000.00	16.17	180.00	7,495.52	2,482.15	-284.00	-2,478.15	12.00	12.00	0.00
8,025.00	19.17	180.00	7,519.33	2,474.56	-284.00	-2,470.56	12.00	12.00	0.00
8,050.00	22.17	180.00	7,542.72	2,465.73	-284.00	-2,461.74	12.00	12.00	0.00
8,075.00	25.17	180.00	7,565.61	2,455.70	-284.00	-2,451.70	12.00	12.00	0.00
8,100.00	28.17	180.00	7,587.95	2,444.48	-284.00	-2,440.48	12.00	12.00	0.00
8,125.00	31.17	180.00	7,609.67	2,432.10	-283.99	-2,428.11	12.00	12.00	0.00
8,141.93	33.21	180.00	7,624.00	2,423.08	-283.99	-2,419.09	12.00	12.00	0.00
<b>SHANNON</b>									
8,150.00	34.17	180.00	7,630.71	2,418.61	-283.99	-2,414.61	12.00	12.00	0.00
8,175.00	37.17	180.00	7,651.02	2,404.03	-283.99	-2,400.04	12.00	12.00	0.00
8,191.51	39.15	180.00	7,664.00	2,393.83	-283.99	-2,389.84	12.00	12.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)	
<b>NIOBARRA</b>										
8,200.00	40.17	180.00	7,670.53	2,388.41	-283.99	-2,384.42	12.00	12.00	0.00	
8,225.00	43.17	180.00	7,689.21	2,371.79	-283.99	-2,367.80	12.00	12.00	0.00	
8,250.00	46.17	180.00	7,706.98	2,354.21	-283.99	-2,350.23	12.00	12.00	0.00	
8,275.00	49.17	180.00	7,723.81	2,335.73	-283.99	-2,331.75	12.00	12.00	0.00	
8,300.00	52.17	180.00	7,739.66	2,316.40	-283.98	-2,312.41	12.00	12.00	0.00	
8,325.00	55.17	180.00	7,754.46	2,296.26	-283.98	-2,292.28	12.00	12.00	0.00	
8,350.00	58.17	180.00	7,768.20	2,275.37	-283.98	-2,271.39	12.00	12.00	0.00	
8,375.00	61.17	180.00	7,780.82	2,253.80	-283.98	-2,249.82	12.00	12.00	0.00	
8,400.00	64.17	180.00	7,792.30	2,231.59	-283.98	-2,227.61	12.00	12.00	0.00	
8,425.00	67.17	180.00	7,802.60	2,208.81	-283.98	-2,204.84	12.00	12.00	0.00	
8,450.00	70.17	180.00	7,811.69	2,185.53	-283.97	-2,181.56	12.00	12.00	0.00	
8,475.00	73.17	180.00	7,819.55	2,161.80	-283.97	-2,157.83	12.00	12.00	0.00	
8,500.00	76.17	180.00	7,826.16	2,137.69	-283.97	-2,133.72	12.00	12.00	0.00	
8,517.36	78.25	180.00	7,830.00	2,120.76	-283.97	-2,116.80	12.00	12.00	0.00	
<b>NIO B TARGET</b>										
8,525.00	79.17	180.00	7,831.50	2,113.27	-283.97	-2,109.30	12.00	12.00	0.00	
8,550.00	82.17	180.00	7,835.55	2,088.60	-283.97	-2,084.64	12.00	12.00	0.00	
8,575.00	85.17	180.00	7,838.30	2,063.76	-283.96	-2,059.80	12.00	12.00	0.00	
8,600.00	88.17	180.00	7,839.76	2,038.80	-283.96	-2,034.85	12.00	12.00	0.00	
8,615.26	90.00	180.00	7,840.00	2,023.55	-283.96	-2,019.59	12.00	12.00	0.00	
<b>Start 5000.00 hold at 8615.26 MD</b>										
8,700.00	90.00	180.00	7,840.00	1,938.81	-283.95	-1,934.86	0.00	0.00	0.00	
8,800.00	90.00	180.00	7,840.00	1,838.81	-283.94	-1,834.87	0.00	0.00	0.00	
8,900.00	90.00	180.00	7,840.00	1,738.81	-283.94	-1,734.87	0.00	0.00	0.00	
9,000.00	90.00	180.00	7,840.00	1,638.81	-283.93	-1,634.88	0.00	0.00	0.00	
9,100.00	90.00	180.00	7,840.00	1,538.81	-283.92	-1,534.89	0.00	0.00	0.00	
9,200.00	90.00	180.00	7,840.00	1,438.81	-283.91	-1,434.90	0.00	0.00	0.00	
9,300.00	90.00	180.00	7,840.00	1,338.81	-283.90	-1,334.91	0.00	0.00	0.00	
9,400.00	90.00	180.00	7,840.00	1,238.81	-283.89	-1,234.92	0.00	0.00	0.00	
9,500.00	90.00	180.00	7,840.00	1,138.81	-283.89	-1,134.93	0.00	0.00	0.00	
9,600.00	90.00	180.00	7,840.00	1,038.81	-283.88	-1,034.94	0.00	0.00	0.00	
9,700.00	90.00	180.00	7,840.00	938.81	-283.87	-934.95	0.00	0.00	0.00	
9,800.00	90.00	180.00	7,840.00	838.81	-283.86	-834.96	0.00	0.00	0.00	
9,900.00	90.00	180.00	7,839.99	738.81	-283.85	-734.96	0.00	0.00	0.00	
10,000.00	90.00	180.00	7,839.99	638.81	-283.84	-634.97	0.00	0.00	0.00	
10,100.00	90.00	180.00	7,839.99	538.81	-283.84	-534.98	0.00	0.00	0.00	
10,200.00	90.00	180.00	7,839.99	438.81	-283.83	-434.99	0.00	0.00	0.00	
10,300.00	90.00	180.00	7,839.99	338.81	-283.82	-335.00	0.00	0.00	0.00	
10,400.00	90.00	180.00	7,839.99	238.81	-283.81	-235.01	0.00	0.00	0.00	
10,500.00	90.00	180.00	7,839.99	138.81	-283.80	-135.02	0.00	0.00	0.00	
10,600.00	90.00	180.00	7,839.99	38.81	-283.79	-35.03	0.00	0.00	0.00	
10,700.00	90.00	180.00	7,839.99	-61.19	-283.79	64.96	0.00	0.00	0.00	
10,800.00	90.00	180.00	7,839.99	-161.19	-283.78	164.95	0.00	0.00	0.00	
10,900.00	90.00	180.00	7,839.99	-261.19	-283.77	264.95	0.00	0.00	0.00	
11,000.00	90.00	180.00	7,839.99	-361.19	-283.76	364.94	0.00	0.00	0.00	
11,100.00	90.00	180.00	7,839.99	-461.19	-283.75	464.93	0.00	0.00	0.00	
11,200.00	90.00	180.00	7,839.99	-561.19	-283.74	564.92	0.00	0.00	0.00	
11,300.00	90.00	180.00	7,839.99	-661.19	-283.74	664.91	0.00	0.00	0.00	
11,400.00	90.00	180.00	7,839.99	-761.19	-283.73	764.90	0.00	0.00	0.00	
11,500.00	90.00	180.00	7,839.99	-861.19	-283.72	864.89	0.00	0.00	0.00	
11,600.00	90.00	180.00	7,839.99	-961.19	-283.71	964.88	0.00	0.00	0.00	
11,700.00	90.00	180.00	7,839.99	-1,061.19	-283.70	1,064.87	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
11,800.00	90.00	180.00	7,839.99	-1,161.19	-283.69	1,164.87	0.00	0.00	0.00
11,900.00	90.00	180.00	7,839.99	-1,261.19	-283.68	1,264.86	0.00	0.00	0.00
12,000.00	90.00	180.00	7,839.99	-1,361.19	-283.68	1,364.85	0.00	0.00	0.00
12,100.00	90.00	180.00	7,839.99	-1,461.19	-283.67	1,464.84	0.00	0.00	0.00
12,200.00	90.00	180.00	7,839.99	-1,561.19	-283.66	1,564.83	0.00	0.00	0.00
12,300.00	90.00	180.00	7,839.99	-1,661.19	-283.65	1,664.82	0.00	0.00	0.00
12,400.00	90.00	180.00	7,839.98	-1,761.19	-283.64	1,764.81	0.00	0.00	0.00
12,500.00	90.00	180.00	7,839.98	-1,861.19	-283.63	1,864.80	0.00	0.00	0.00
12,600.00	90.00	180.00	7,839.98	-1,961.19	-283.63	1,964.79	0.00	0.00	0.00
12,700.00	90.00	180.00	7,839.98	-2,061.19	-283.62	2,064.78	0.00	0.00	0.00
12,800.00	90.00	180.00	7,839.98	-2,161.19	-283.61	2,164.78	0.00	0.00	0.00
12,900.00	90.00	180.00	7,839.98	-2,261.19	-283.60	2,264.77	0.00	0.00	0.00
13,000.00	90.00	180.00	7,839.98	-2,361.19	-283.59	2,364.76	0.00	0.00	0.00
13,100.00	90.00	180.00	7,839.98	-2,461.19	-283.58	2,464.75	0.00	0.00	0.00
13,200.00	90.00	180.00	7,839.98	-2,561.19	-283.58	2,564.74	0.00	0.00	0.00
13,300.00	90.00	180.00	7,839.98	-2,661.19	-283.57	2,664.73	0.00	0.00	0.00
13,400.00	90.00	180.00	7,839.98	-2,761.19	-283.56	2,764.72	0.00	0.00	0.00
13,500.00	90.00	180.00	7,839.98	-2,861.19	-283.55	2,864.71	0.00	0.00	0.00
13,600.00	90.00	180.00	7,839.98	-2,961.19	-283.54	2,964.70	0.00	0.00	0.00
13,615.26	90.00	180.00	7,839.98	-2,976.45	-283.54	2,979.96	0.00	0.00	0.00
Start DLS 2.00 TFO 90.01									
13,700.00	90.00	181.69	7,839.98	-3,061.18	-284.79	3,064.70	2.00	0.00	2.00
13,715.50	90.00	182.00	7,839.98	-3,076.67	-285.29	3,080.19	2.00	0.00	2.00
Start 150.00 hold at 13715.50 MD									
13,800.00	90.00	182.00	7,839.98	-3,161.12	-288.24	3,164.68	0.00	0.00	0.00
13,865.50	90.00	182.00	7,839.98	-3,226.58	-290.52	3,230.16	0.00	0.00	0.00
Start Turn -2.00									
13,900.00	90.00	181.31	7,839.98	-3,261.07	-291.52	3,264.66	2.00	0.00	-2.00
13,999.16	90.00	179.33	7,839.98	-3,360.22	-292.07	3,363.81	2.00	0.00	-2.00
Start 9871.56 hold at 13999.16 MD									
14,100.00	90.00	179.33	7,839.98	-3,461.05	-290.88	3,464.62	0.00	0.00	0.00
14,200.00	90.00	179.33	7,839.98	-3,561.05	-289.71	3,564.59	0.00	0.00	0.00
14,300.00	90.00	179.33	7,839.98	-3,661.04	-288.53	3,664.55	0.00	0.00	0.00
14,400.00	90.00	179.33	7,839.98	-3,761.03	-287.36	3,764.52	0.00	0.00	0.00
14,500.00	90.00	179.33	7,839.98	-3,861.03	-286.18	3,864.49	0.00	0.00	0.00
14,600.00	90.00	179.33	7,839.98	-3,961.02	-285.01	3,964.46	0.00	0.00	0.00
14,700.00	90.00	179.33	7,839.98	-4,061.01	-283.83	4,064.43	0.00	0.00	0.00
14,800.00	90.00	179.33	7,839.98	-4,161.01	-282.66	4,164.40	0.00	0.00	0.00
14,900.00	90.00	179.33	7,839.98	-4,261.00	-281.48	4,264.37	0.00	0.00	0.00
15,000.00	90.00	179.33	7,839.98	-4,360.99	-280.31	4,364.34	0.00	0.00	0.00
15,100.00	90.00	179.33	7,839.98	-4,460.98	-279.13	4,464.30	0.00	0.00	0.00
15,200.00	90.00	179.33	7,839.98	-4,560.98	-277.96	4,564.27	0.00	0.00	0.00
15,300.00	90.00	179.33	7,839.98	-4,660.97	-276.78	4,664.24	0.00	0.00	0.00
15,400.00	90.00	179.33	7,839.98	-4,760.96	-275.61	4,764.21	0.00	0.00	0.00
15,500.00	90.00	179.33	7,839.98	-4,860.96	-274.43	4,864.18	0.00	0.00	0.00
15,600.00	90.00	179.33	7,839.98	-4,960.95	-273.26	4,964.15	0.00	0.00	0.00
15,700.00	90.00	179.33	7,839.98	-5,060.94	-272.08	5,064.12	0.00	0.00	0.00
15,800.00	90.00	179.33	7,839.98	-5,160.94	-270.91	5,164.08	0.00	0.00	0.00
15,900.00	90.00	179.33	7,839.98	-5,260.93	-269.73	5,264.05	0.00	0.00	0.00
16,000.00	90.00	179.33	7,839.98	-5,360.92	-268.56	5,364.02	0.00	0.00	0.00
16,100.00	90.00	179.33	7,839.98	-5,460.92	-267.38	5,463.99	0.00	0.00	0.00
16,200.00	90.00	179.33	7,839.98	-5,560.91	-266.21	5,563.96	0.00	0.00	0.00
16,300.00	90.00	179.33	7,839.98	-5,660.90	-265.03	5,663.93	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
16,400.00	90.00	179.33	7,839.98	-5,760.89	-263.86	5,763.90	0.00	0.00	0.00
16,500.00	90.00	179.33	7,839.98	-5,860.89	-262.68	5,863.86	0.00	0.00	0.00
16,600.00	90.00	179.33	7,839.98	-5,960.88	-261.51	5,963.83	0.00	0.00	0.00
16,700.00	90.00	179.33	7,839.98	-6,060.87	-260.33	6,063.80	0.00	0.00	0.00
16,800.00	90.00	179.33	7,839.98	-6,160.87	-259.16	6,163.77	0.00	0.00	0.00
16,900.00	90.00	179.33	7,839.98	-6,260.86	-257.98	6,263.74	0.00	0.00	0.00
17,000.00	90.00	179.33	7,839.98	-6,360.85	-256.81	6,363.71	0.00	0.00	0.00
17,100.00	90.00	179.33	7,839.98	-6,460.85	-255.63	6,463.68	0.00	0.00	0.00
17,200.00	90.00	179.33	7,839.98	-6,560.84	-254.46	6,563.64	0.00	0.00	0.00
17,300.00	90.00	179.33	7,839.98	-6,660.83	-253.28	6,663.61	0.00	0.00	0.00
17,400.00	90.00	179.33	7,839.98	-6,760.83	-252.11	6,763.58	0.00	0.00	0.00
17,500.00	90.00	179.33	7,839.98	-6,860.82	-250.93	6,863.55	0.00	0.00	0.00
17,600.00	90.00	179.33	7,839.98	-6,960.81	-249.76	6,963.52	0.00	0.00	0.00
17,700.00	90.00	179.33	7,839.98	-7,060.81	-248.58	7,063.49	0.00	0.00	0.00
17,800.00	90.00	179.33	7,839.98	-7,160.80	-247.41	7,163.46	0.00	0.00	0.00
17,900.00	90.00	179.33	7,839.98	-7,260.79	-246.23	7,263.43	0.00	0.00	0.00
18,000.00	90.00	179.33	7,839.98	-7,360.78	-245.06	7,363.39	0.00	0.00	0.00
18,100.00	90.00	179.33	7,839.98	-7,460.78	-243.88	7,463.36	0.00	0.00	0.00
18,200.00	90.00	179.33	7,839.98	-7,560.77	-242.71	7,563.33	0.00	0.00	0.00
18,300.00	90.00	179.33	7,839.98	-7,660.76	-241.53	7,663.30	0.00	0.00	0.00
18,400.00	90.00	179.33	7,839.98	-7,760.76	-240.36	7,763.27	0.00	0.00	0.00
18,500.00	90.00	179.33	7,839.98	-7,860.75	-239.18	7,863.24	0.00	0.00	0.00
18,600.00	90.00	179.33	7,839.98	-7,960.74	-238.01	7,963.21	0.00	0.00	0.00
18,700.00	90.00	179.33	7,839.98	-8,060.74	-236.83	8,063.17	0.00	0.00	0.00
18,800.00	90.00	179.33	7,839.98	-8,160.73	-235.66	8,163.14	0.00	0.00	0.00
18,900.00	90.00	179.33	7,839.98	-8,260.72	-234.48	8,263.11	0.00	0.00	0.00
19,000.00	90.00	179.33	7,839.98	-8,360.72	-233.31	8,363.08	0.00	0.00	0.00
19,100.00	90.00	179.33	7,839.98	-8,460.71	-232.13	8,463.05	0.00	0.00	0.00
19,200.00	90.00	179.33	7,839.98	-8,560.70	-230.96	8,563.02	0.00	0.00	0.00
19,300.00	90.00	179.33	7,839.98	-8,660.69	-229.78	8,662.99	0.00	0.00	0.00
19,400.00	90.00	179.33	7,839.98	-8,760.69	-228.61	8,762.95	0.00	0.00	0.00
19,500.00	90.00	179.33	7,839.98	-8,860.68	-227.43	8,862.92	0.00	0.00	0.00
19,600.00	90.00	179.33	7,839.98	-8,960.67	-226.26	8,962.89	0.00	0.00	0.00
19,700.00	90.00	179.33	7,839.98	-9,060.67	-225.09	9,062.86	0.00	0.00	0.00
19,800.00	90.00	179.33	7,839.98	-9,160.66	-223.91	9,162.83	0.00	0.00	0.00
19,900.00	90.00	179.33	7,839.98	-9,260.65	-222.74	9,262.80	0.00	0.00	0.00
20,000.00	90.00	179.33	7,839.98	-9,360.65	-221.56	9,362.77	0.00	0.00	0.00
20,100.00	90.00	179.33	7,839.98	-9,460.64	-220.39	9,462.73	0.00	0.00	0.00
20,200.00	90.00	179.33	7,839.98	-9,560.63	-219.21	9,562.70	0.00	0.00	0.00
20,300.00	90.00	179.33	7,839.98	-9,660.63	-218.04	9,662.67	0.00	0.00	0.00
20,400.00	90.00	179.33	7,839.98	-9,760.62	-216.86	9,762.64	0.00	0.00	0.00
20,500.00	90.00	179.33	7,839.98	-9,860.61	-215.69	9,862.61	0.00	0.00	0.00
20,600.00	90.00	179.33	7,839.98	-9,960.61	-214.51	9,962.58	0.00	0.00	0.00
20,700.00	90.00	179.33	7,839.98	-10,060.60	-213.34	10,062.55	0.00	0.00	0.00
20,800.00	90.00	179.33	7,839.98	-10,160.59	-212.16	10,162.51	0.00	0.00	0.00
20,900.00	90.00	179.33	7,839.98	-10,260.58	-210.99	10,262.48	0.00	0.00	0.00
21,000.00	90.00	179.33	7,839.98	-10,360.58	-209.81	10,362.45	0.00	0.00	0.00
23,870.72	90.00	179.33	7,840.00	-13,231.10	-176.08	13,232.27	0.00	0.00	0.00
TD at 23870.72									

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well INTERCHANGE A S22-30-2N
<b>Company:</b>	EXTRACTION OIL & GAS	<b>TVD Reference:</b>	KB 25' @ 5261.00usft
<b>Project:</b>	Broomfield County	<b>MD Reference:</b>	KB 25' @ 5261.00usft
<b>Site:</b>	Sec 10-T1S-R68W	<b>North Reference:</b>	True
<b>Well:</b>	INTERCHANGE A S22-30-2N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
INTERCHANGE A S22-30-2N - plan hits target center - Point	0.00	0.00	7,840.00	2,023.55	-283.96	1,238,239.11	3,141,492.34	39° 59' 10.482 N	104° 59' 42.167 W
INTERCHANGE A S22-30-2N - plan hits target center - Point	0.00	0.00	7,840.00	-13,231.10	-176.08	1,222,985.32	3,141,687.26	39° 56' 39.725 N	104° 59' 40.780 W

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
5,262.44	4,915.00	PARKMAN				
5,388.50	5,030.00	SUSSEX				
8,141.93	7,624.00	SHANNON				
8,191.51	7,664.00	NIOBRARA				
8,517.36	7,830.00	NIO B TARGET				

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 2.00
1,709.20	1,673.61	249.82	-28.37	Start 4916.80 hold at 1709.20 MD
6,626.00	6,158.89	2,251.23	-255.63	Start Drop -2.00
7,835.20	7,332.50	2,501.05	-284.00	Start 30.00 hold at 7835.20 MD
7,865.20	7,362.50	2,501.05	-284.00	Start DLS 12.00 TFO 180.00
8,615.26	7,840.00	2,023.55	-283.96	Start 5000.00 hold at 8615.26 MD
13,615.26	7,839.98	-2,976.45	-283.54	Start DLS 2.00 TFO 90.01
13,715.50	7,839.98	-3,076.67	-285.29	Start 150.00 hold at 13715.50 MD
13,865.50	7,839.98	-3,226.58	-290.52	Start Turn -2.00
13,999.16	7,839.98	-3,360.22	-292.07	Start 9871.56 hold at 13999.16 MD
23,870.72	7,840.00	-13,231.10	-176.08	TD at 23870.72