

EXTRACTION OIL & GAS

Broomfield County

Sec 9-T1S-R68W

NORTHWEST A S20-25-13N

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

18 January, 2018



Project: Broomfield County
Site: Sec 9-T1S-R68W
Well: NORTHWEST A S20-25-13N
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: 8.25°

Magnetic Field
Strength: 52082.0snT
Dip Angle: 66.47°
Date: 1/4/2018
Model: IGRF2015

WELL DETAILS: NORTHWEST A S20-25-13N

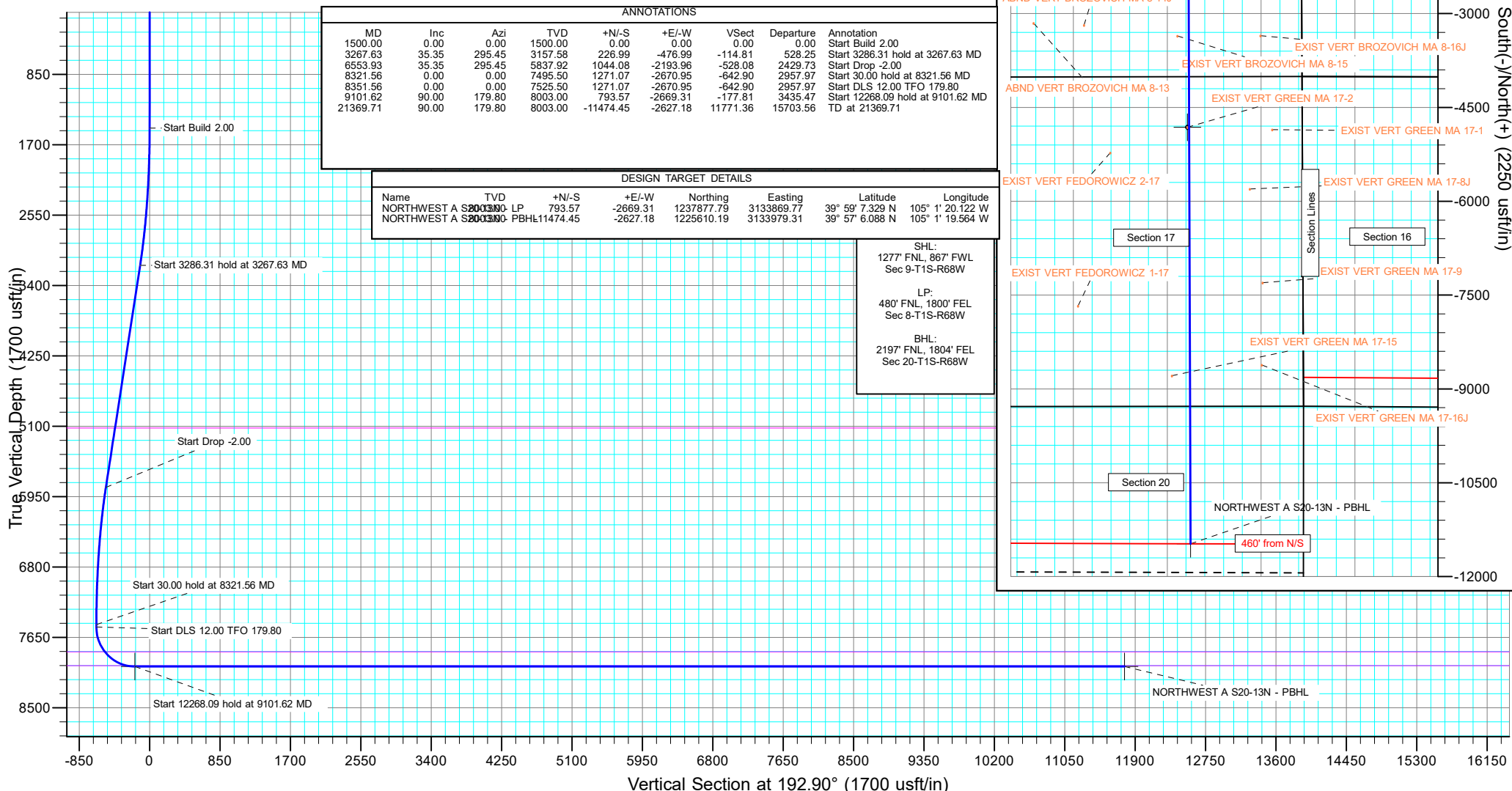
+N/-S	+E/-W	Northing	Easting	5293.00	Latitude	Longitude	Slot
0.00	0.00	1237098.90	3136543.40		39° 58' 59.487 N	105° 0' 45.828 W	

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	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	3267.63	35.35	295.45	3157.58	226.99	-476.99	2.00	295.45	-114.81	
4	6553.93	35.35	295.45	5837.92	1044.08	-2193.96	0.00	0.00	-528.08	
5	8321.56	0.00	0.00	7495.50	1271.07	-2670.95	2.00	180.00	-642.90	
6	8351.56	0.00	0.00	7525.50	1271.07	-2670.95	0.00	0.00	-642.90	
7	9101.62	90.00	179.80	8003.00	793.57	-2669.31	12.00	179.80	-177.81	NORTHWEST A S20-13N - LP
8	21369.71	90.00	179.80	8003.00	-11474.45	-2627.18	0.00	0.00	11771.36	NORTHWEST A S20-13N - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5122.00	5676.16	SUSSEX
7825.00	8675.30	NIORARA
7993.00	9003.72	NIO B TARGET



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-13N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-13N	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 9-T1S-R68W			
Site Position:		Northing:	1,238,372.37 usft	Latitude:	39° 59' 12.120 N
From:	Lat/Long	Easting:	3,135,664.83 usft	Longitude:	105° 0' 57.025 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.31 °

Well	NORTHWEST A S20-25-13N					
Well Position	+N/-S	-1,278.25 usft	Northing:	1,237,098.90 usft	Latitude:	39° 58' 59.487 N
	+E/-W	871.60 usft	Easting:	3,136,543.40 usft	Longitude:	105° 0' 45.828 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,293.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/4/2018	8.25	66.47	52,081.96805139

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	192.90

Plan Survey Tool Program	Date	1/18/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,368.87	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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,267.63	35.35	295.45	3,157.58	226.99	-476.99	2.00	2.00	0.00	295.45	
6,553.93	35.35	295.45	5,837.92	1,044.08	-2,193.96	0.00	0.00	0.00	0.00	
8,321.56	0.00	0.00	7,495.50	1,271.07	-2,670.95	2.00	-2.00	0.00	180.00	
8,351.56	0.00	0.00	7,525.50	1,271.07	-2,670.95	0.00	0.00	0.00	0.00	
9,101.62	90.00	179.80	8,003.00	793.57	-2,669.31	12.00	12.00	23.97	179.80	NORTHWEST A S20-
21,369.71	90.00	179.80	8,003.00	-11,474.45	-2,627.18	0.00	0.00	0.00	0.00	NORTHWEST A S20-

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Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-13N	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
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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,600.00	2.00	295.45	1,599.98	0.75	-1.58	-0.38	2.00	2.00	0.00
1,700.00	4.00	295.45	1,699.84	3.00	-6.30	-1.52	2.00	2.00	0.00
1,800.00	6.00	295.45	1,799.45	6.74	-14.17	-3.41	2.00	2.00	0.00
1,900.00	8.00	295.45	1,898.70	11.98	-25.17	-6.06	2.00	2.00	0.00
2,000.00	10.00	295.45	1,997.47	18.70	-39.30	-9.46	2.00	2.00	0.00
2,100.00	12.00	295.45	2,095.62	26.90	-56.53	-13.61	2.00	2.00	0.00
2,200.00	14.00	295.45	2,193.06	36.57	-76.84	-18.50	2.00	2.00	0.00
2,300.00	16.00	295.45	2,289.64	47.69	-100.21	-24.12	2.00	2.00	0.00
2,400.00	18.00	295.45	2,385.27	60.25	-126.61	-30.47	2.00	2.00	0.00
2,500.00	20.00	295.45	2,479.82	74.24	-156.00	-37.55	2.00	2.00	0.00
2,600.00	22.00	295.45	2,573.17	89.64	-188.36	-45.34	2.00	2.00	0.00
2,700.00	24.00	295.45	2,665.21	106.43	-223.64	-53.83	2.00	2.00	0.00
2,800.00	26.00	295.45	2,755.84	124.59	-261.80	-63.02	2.00	2.00	0.00
2,900.00	28.00	295.45	2,844.94	144.10	-302.79	-72.88	2.00	2.00	0.00
3,000.00	30.00	295.45	2,932.39	164.93	-346.57	-83.42	2.00	2.00	0.00
3,100.00	32.00	295.45	3,018.11	187.06	-393.07	-94.61	2.00	2.00	0.00
3,200.00	34.00	295.45	3,101.97	210.46	-442.25	-106.45	2.00	2.00	0.00
3,267.63	35.35	295.45	3,157.58	226.99	-476.99	-114.81	2.00	2.00	0.00
Start 3286.31 hold at 3267.63 MD									
3,300.00	35.35	295.45	3,183.99	235.04	-493.90	-118.88	0.00	0.00	0.00
3,400.00	35.35	295.45	3,265.55	259.91	-546.15	-131.46	0.00	0.00	0.00
3,500.00	35.35	295.45	3,347.11	284.77	-598.40	-144.03	0.00	0.00	0.00
3,600.00	35.35	295.45	3,428.67	309.63	-650.64	-156.61	0.00	0.00	0.00
3,700.00	35.35	295.45	3,510.23	334.50	-702.89	-169.18	0.00	0.00	0.00
3,800.00	35.35	295.45	3,591.79	359.36	-755.13	-181.76	0.00	0.00	0.00
3,900.00	35.35	295.45	3,673.35	384.22	-807.38	-194.34	0.00	0.00	0.00
4,000.00	35.35	295.45	3,754.91	409.09	-859.63	-206.91	0.00	0.00	0.00
4,100.00	35.35	295.45	3,836.47	433.95	-911.87	-219.49	0.00	0.00	0.00
4,200.00	35.35	295.45	3,918.03	458.81	-964.12	-232.06	0.00	0.00	0.00
4,300.00	35.35	295.45	3,999.59	483.68	-1,016.37	-244.64	0.00	0.00	0.00
4,400.00	35.35	295.45	4,081.15	508.54	-1,068.61	-257.21	0.00	0.00	0.00
4,500.00	35.35	295.45	4,162.72	533.40	-1,120.86	-269.79	0.00	0.00	0.00
4,600.00	35.35	295.45	4,244.28	558.26	-1,173.10	-282.37	0.00	0.00	0.00
4,700.00	35.35	295.45	4,325.84	583.13	-1,225.35	-294.94	0.00	0.00	0.00
4,800.00	35.35	295.45	4,407.40	607.99	-1,277.60	-307.52	0.00	0.00	0.00
4,900.00	35.35	295.45	4,488.96	632.85	-1,329.84	-320.09	0.00	0.00	0.00

Planning Report

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Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
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Well:	NORTHWEST A S20-25-13N	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	35.35	295.45	4,570.52	657.72	-1,382.09	-332.67	0.00	0.00	0.00
5,100.00	35.35	295.45	4,652.08	682.58	-1,434.34	-345.24	0.00	0.00	0.00
5,200.00	35.35	295.45	4,733.64	707.44	-1,486.58	-357.82	0.00	0.00	0.00
5,300.00	35.35	295.45	4,815.20	732.31	-1,538.83	-370.39	0.00	0.00	0.00
5,400.00	35.35	295.45	4,896.76	757.17	-1,591.07	-382.97	0.00	0.00	0.00
5,500.00	35.35	295.45	4,978.32	782.03	-1,643.32	-395.55	0.00	0.00	0.00
5,600.00	35.35	295.45	5,059.88	806.90	-1,695.57	-408.12	0.00	0.00	0.00
5,676.16	35.35	295.45	5,122.00	825.83	-1,735.36	-417.70	0.00	0.00	0.00
SUSSEX									
5,700.00	35.35	295.45	5,141.44	831.76	-1,747.81	-420.70	0.00	0.00	0.00
5,800.00	35.35	295.45	5,223.00	856.62	-1,800.06	-433.27	0.00	0.00	0.00
5,900.00	35.35	295.45	5,304.57	881.49	-1,852.31	-445.85	0.00	0.00	0.00
6,000.00	35.35	295.45	5,386.13	906.35	-1,904.55	-458.42	0.00	0.00	0.00
6,100.00	35.35	295.45	5,467.69	931.21	-1,956.80	-471.00	0.00	0.00	0.00
6,200.00	35.35	295.45	5,549.25	956.08	-2,009.04	-483.58	0.00	0.00	0.00
6,300.00	35.35	295.45	5,630.81	980.94	-2,061.29	-496.15	0.00	0.00	0.00
6,400.00	35.35	295.45	5,712.37	1,005.80	-2,113.54	-508.73	0.00	0.00	0.00
6,500.00	35.35	295.45	5,793.93	1,030.67	-2,165.78	-521.30	0.00	0.00	0.00
6,553.93	35.35	295.45	5,837.92	1,044.08	-2,193.96	-528.09	0.00	0.00	0.00
Start Drop -2.00									
6,600.00	34.43	295.45	5,875.70	1,055.40	-2,217.76	-533.81	2.00	-2.00	0.00
6,700.00	32.43	295.45	5,959.15	1,079.07	-2,267.50	-545.79	2.00	-2.00	0.00
6,800.00	30.43	295.45	6,044.48	1,101.48	-2,314.59	-557.12	2.00	-2.00	0.00
6,900.00	28.43	295.45	6,131.57	1,122.59	-2,358.95	-567.80	2.00	-2.00	0.00
7,000.00	26.43	295.45	6,220.32	1,142.39	-2,400.55	-577.81	2.00	-2.00	0.00
7,100.00	24.43	295.45	6,310.62	1,160.84	-2,439.32	-587.14	2.00	-2.00	0.00
7,200.00	22.43	295.45	6,402.37	1,177.93	-2,475.23	-595.79	2.00	-2.00	0.00
7,300.00	20.43	295.45	6,495.45	1,193.63	-2,508.22	-603.73	2.00	-2.00	0.00
7,400.00	18.43	295.45	6,589.75	1,207.92	-2,538.26	-610.96	2.00	-2.00	0.00
7,500.00	16.43	295.45	6,685.16	1,220.79	-2,565.30	-617.47	2.00	-2.00	0.00
7,600.00	14.43	295.45	6,781.55	1,232.23	-2,589.33	-623.25	2.00	-2.00	0.00
7,700.00	12.43	295.45	6,878.81	1,242.21	-2,610.30	-628.30	2.00	-2.00	0.00
7,800.00	10.43	295.45	6,976.82	1,250.72	-2,628.20	-632.61	2.00	-2.00	0.00
7,900.00	8.43	295.45	7,075.46	1,257.77	-2,642.99	-636.17	2.00	-2.00	0.00
8,000.00	6.43	295.45	7,174.62	1,263.32	-2,654.67	-638.98	2.00	-2.00	0.00
8,100.00	4.43	295.45	7,274.16	1,267.39	-2,663.22	-641.03	2.00	-2.00	0.00
8,200.00	2.43	295.45	7,373.98	1,269.96	-2,668.62	-642.34	2.00	-2.00	0.00
8,300.00	0.43	295.45	7,473.94	1,271.04	-2,670.88	-642.88	2.00	-2.00	0.00
8,321.56	0.00	0.00	7,495.50	1,271.07	-2,670.95	-642.90	2.00	-2.00	0.00
Start 30.00 hold at 8321.56 MD									
8,351.56	0.00	0.00	7,525.50	1,271.07	-2,670.95	-642.90	0.00	0.00	0.00
Start DLS 12.00 TFO 179.80									
8,375.00	2.81	179.80	7,548.93	1,270.49	-2,670.95	-642.34	12.00	12.00	0.00
8,400.00	5.81	179.80	7,573.86	1,268.62	-2,670.94	-640.50	12.00	12.00	0.00
8,425.00	8.81	179.80	7,598.65	1,265.43	-2,670.93	-637.41	12.00	12.00	0.00
8,450.00	11.81	179.80	7,623.24	1,260.96	-2,670.92	-633.05	12.00	12.00	0.00
8,475.00	14.81	179.80	7,647.57	1,255.20	-2,670.90	-627.44	12.00	12.00	0.00
8,500.00	17.81	179.80	7,671.56	1,248.18	-2,670.87	-620.60	12.00	12.00	0.00
8,525.00	20.81	179.80	7,695.15	1,239.92	-2,670.84	-612.55	12.00	12.00	0.00
8,550.00	23.81	179.80	7,718.28	1,230.43	-2,670.81	-603.31	12.00	12.00	0.00
8,575.00	26.81	179.80	7,740.87	1,219.74	-2,670.77	-592.90	12.00	12.00	0.00
8,600.00	29.81	179.80	7,762.88	1,207.88	-2,670.73	-581.35	12.00	12.00	0.00
8,625.00	32.81	179.80	7,784.24	1,194.89	-2,670.69	-568.70	12.00	12.00	0.00

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Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
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Well:	NORTHWEST A S20-25-13N	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)
8,650.00	35.81	179.80	7,804.89	1,180.80	-2,670.64	-554.98	12.00	12.00	0.00
8,675.00	38.81	179.80	7,824.77	1,165.65	-2,670.59	-540.22	12.00	12.00	0.00
8,675.30	38.85	179.80	7,825.00	1,165.47	-2,670.59	-540.04	12.00	12.00	0.00
NIORARA									
8,700.00	41.81	179.80	7,843.83	1,149.48	-2,670.53	-524.47	12.00	12.00	0.00
8,725.00	44.81	179.80	7,862.02	1,132.33	-2,670.47	-507.77	12.00	12.00	0.00
8,750.00	47.81	179.80	7,879.29	1,114.26	-2,670.41	-490.16	12.00	12.00	0.00
8,775.00	50.81	179.80	7,895.58	1,095.31	-2,670.35	-471.70	12.00	12.00	0.00
8,800.00	53.81	179.80	7,910.87	1,075.53	-2,670.28	-452.43	12.00	12.00	0.00
8,825.00	56.81	179.80	7,925.09	1,054.97	-2,670.21	-432.41	12.00	12.00	0.00
8,850.00	59.81	179.80	7,938.23	1,033.70	-2,670.14	-411.70	12.00	12.00	0.00
8,875.00	62.81	179.80	7,950.23	1,011.77	-2,670.06	-390.34	12.00	12.00	0.00
8,900.00	65.81	179.80	7,961.06	989.25	-2,669.98	-368.40	12.00	12.00	0.00
8,925.00	68.81	179.80	7,970.71	966.19	-2,669.91	-345.94	12.00	12.00	0.00
8,950.00	71.81	179.80	7,979.13	942.65	-2,669.82	-323.01	12.00	12.00	0.00
8,975.00	74.81	179.80	7,986.31	918.71	-2,669.74	-299.69	12.00	12.00	0.00
9,000.00	77.81	179.80	7,992.23	894.42	-2,669.66	-276.04	12.00	12.00	0.00
9,003.72	78.25	179.80	7,993.00	890.78	-2,669.65	-272.49	12.00	12.00	0.00
NIO B TARGET									
9,025.00	80.81	179.80	7,996.87	869.86	-2,669.58	-252.11	12.00	12.00	0.00
9,050.00	83.81	179.80	8,000.21	845.09	-2,669.49	-227.98	12.00	12.00	0.00
9,075.00	86.81	179.80	8,002.26	820.17	-2,669.40	-203.72	12.00	12.00	0.00
9,101.62	90.00	179.80	8,003.00	793.57	-2,669.31	-177.81	12.00	12.00	0.00
Start 12268.09 hold at 9101.62 MD									
9,200.00	90.00	179.80	8,003.00	695.19	-2,668.98	-81.98	0.00	0.00	0.00
9,300.00	90.00	179.80	8,003.00	595.19	-2,668.63	15.42	0.00	0.00	0.00
9,400.00	90.00	179.80	8,003.00	495.19	-2,668.29	112.82	0.00	0.00	0.00
9,500.00	90.00	179.80	8,003.00	395.19	-2,667.95	210.22	0.00	0.00	0.00
9,600.00	90.00	179.80	8,003.00	295.19	-2,667.61	307.62	0.00	0.00	0.00
9,700.00	90.00	179.80	8,003.00	195.19	-2,667.26	405.02	0.00	0.00	0.00
9,800.00	90.00	179.80	8,003.00	95.19	-2,666.92	502.42	0.00	0.00	0.00
9,900.00	90.00	179.80	8,003.00	-4.81	-2,666.58	599.82	0.00	0.00	0.00
10,000.00	90.00	179.80	8,002.99	-104.81	-2,666.23	697.22	0.00	0.00	0.00
10,100.00	90.00	179.80	8,002.99	-204.81	-2,665.89	794.62	0.00	0.00	0.00
10,200.00	90.00	179.80	8,002.99	-304.81	-2,665.55	892.03	0.00	0.00	0.00
10,300.00	90.00	179.80	8,002.99	-404.81	-2,665.21	989.43	0.00	0.00	0.00
10,400.00	90.00	179.80	8,002.99	-504.80	-2,664.86	1,086.83	0.00	0.00	0.00
10,500.00	90.00	179.80	8,002.99	-604.80	-2,664.52	1,184.23	0.00	0.00	0.00
10,600.00	90.00	179.80	8,002.99	-704.80	-2,664.18	1,281.63	0.00	0.00	0.00
10,700.00	90.00	179.80	8,002.99	-804.80	-2,663.84	1,379.03	0.00	0.00	0.00
10,800.00	90.00	179.80	8,002.99	-904.80	-2,663.49	1,476.43	0.00	0.00	0.00
10,900.00	90.00	179.80	8,002.99	-1,004.80	-2,663.15	1,573.83	0.00	0.00	0.00
11,000.00	90.00	179.80	8,002.99	-1,104.80	-2,662.81	1,671.23	0.00	0.00	0.00
11,100.00	90.00	179.80	8,002.99	-1,204.80	-2,662.46	1,768.63	0.00	0.00	0.00
11,200.00	90.00	179.80	8,002.99	-1,304.80	-2,662.12	1,866.03	0.00	0.00	0.00
11,300.00	90.00	179.80	8,002.99	-1,404.80	-2,661.78	1,963.43	0.00	0.00	0.00
11,400.00	90.00	179.80	8,002.99	-1,504.80	-2,661.44	2,060.83	0.00	0.00	0.00
11,500.00	90.00	179.80	8,002.99	-1,604.80	-2,661.09	2,158.23	0.00	0.00	0.00
11,600.00	90.00	179.80	8,002.99	-1,704.80	-2,660.75	2,255.63	0.00	0.00	0.00
11,700.00	90.00	179.80	8,002.98	-1,804.80	-2,660.41	2,353.03	0.00	0.00	0.00
11,800.00	90.00	179.80	8,002.98	-1,904.80	-2,660.07	2,450.43	0.00	0.00	0.00
11,900.00	90.00	179.80	8,002.98	-2,004.80	-2,659.72	2,547.84	0.00	0.00	0.00
12,000.00	90.00	179.80	8,002.98	-2,104.80	-2,659.38	2,645.24	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-13N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-13N	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)	
12,100.00	90.00	179.80	8,002.98	-2,204.79	-2,659.04	2,742.64	0.00	0.00	0.00	
12,200.00	90.00	179.80	8,002.98	-2,304.79	-2,658.69	2,840.04	0.00	0.00	0.00	
12,300.00	90.00	179.80	8,002.98	-2,404.79	-2,658.35	2,937.44	0.00	0.00	0.00	
12,400.00	90.00	179.80	8,002.98	-2,504.79	-2,658.01	3,034.84	0.00	0.00	0.00	
12,500.00	90.00	179.80	8,002.98	-2,604.79	-2,657.67	3,132.24	0.00	0.00	0.00	
12,600.00	90.00	179.80	8,002.98	-2,704.79	-2,657.32	3,229.64	0.00	0.00	0.00	
12,700.00	90.00	179.80	8,002.98	-2,804.79	-2,656.98	3,327.04	0.00	0.00	0.00	
12,800.00	90.00	179.80	8,002.98	-2,904.79	-2,656.64	3,424.44	0.00	0.00	0.00	
12,900.00	90.00	179.80	8,002.98	-3,004.79	-2,656.30	3,521.84	0.00	0.00	0.00	
13,000.00	90.00	179.80	8,002.98	-3,104.79	-2,655.95	3,619.24	0.00	0.00	0.00	
13,100.00	90.00	179.80	8,002.98	-3,204.79	-2,655.61	3,716.64	0.00	0.00	0.00	
13,200.00	90.00	179.80	8,002.98	-3,304.79	-2,655.27	3,814.04	0.00	0.00	0.00	
13,300.00	90.00	179.80	8,002.98	-3,404.79	-2,654.92	3,911.44	0.00	0.00	0.00	
13,400.00	90.00	179.80	8,002.97	-3,504.79	-2,654.58	4,008.84	0.00	0.00	0.00	
13,500.00	90.00	179.80	8,002.97	-3,604.79	-2,654.24	4,106.24	0.00	0.00	0.00	
13,600.00	90.00	179.80	8,002.97	-3,704.79	-2,653.90	4,203.64	0.00	0.00	0.00	
13,700.00	90.00	179.80	8,002.97	-3,804.79	-2,653.55	4,301.05	0.00	0.00	0.00	
13,800.00	90.00	179.80	8,002.97	-3,904.78	-2,653.21	4,398.45	0.00	0.00	0.00	
13,900.00	90.00	179.80	8,002.97	-4,004.78	-2,652.87	4,495.85	0.00	0.00	0.00	
14,000.00	90.00	179.80	8,002.97	-4,104.78	-2,652.53	4,593.25	0.00	0.00	0.00	
14,100.00	90.00	179.80	8,002.97	-4,204.78	-2,652.18	4,690.65	0.00	0.00	0.00	
14,200.00	90.00	179.80	8,002.97	-4,304.78	-2,651.84	4,788.05	0.00	0.00	0.00	
14,300.00	90.00	179.80	8,002.97	-4,404.78	-2,651.50	4,885.45	0.00	0.00	0.00	
14,400.00	90.00	179.80	8,002.97	-4,504.78	-2,651.15	4,982.85	0.00	0.00	0.00	
14,500.00	90.00	179.80	8,002.97	-4,604.78	-2,650.81	5,080.25	0.00	0.00	0.00	
14,600.00	90.00	179.80	8,002.97	-4,704.78	-2,650.47	5,177.65	0.00	0.00	0.00	
14,700.00	90.00	179.80	8,002.97	-4,804.78	-2,650.13	5,275.05	0.00	0.00	0.00	
14,800.00	90.00	179.80	8,002.97	-4,904.78	-2,649.78	5,372.45	0.00	0.00	0.00	
14,900.00	90.00	179.80	8,002.97	-5,004.78	-2,649.44	5,469.85	0.00	0.00	0.00	
15,000.00	90.00	179.80	8,002.97	-5,104.78	-2,649.10	5,567.25	0.00	0.00	0.00	
15,100.00	90.00	179.80	8,002.96	-5,204.78	-2,648.76	5,664.65	0.00	0.00	0.00	
15,200.00	90.00	179.80	8,002.96	-5,304.78	-2,648.41	5,762.05	0.00	0.00	0.00	
15,300.00	90.00	179.80	8,002.96	-5,404.78	-2,648.07	5,859.45	0.00	0.00	0.00	
15,400.00	90.00	179.80	8,002.96	-5,504.78	-2,647.73	5,956.86	0.00	0.00	0.00	
15,500.00	90.00	179.80	8,002.96	-5,604.77	-2,647.38	6,054.26	0.00	0.00	0.00	
15,600.00	90.00	179.80	8,002.96	-5,704.77	-2,647.04	6,151.66	0.00	0.00	0.00	
15,700.00	90.00	179.80	8,002.96	-5,804.77	-2,646.70	6,249.06	0.00	0.00	0.00	
15,800.00	90.00	179.80	8,002.96	-5,904.77	-2,646.36	6,346.46	0.00	0.00	0.00	
15,900.00	90.00	179.80	8,002.96	-6,004.77	-2,646.01	6,443.86	0.00	0.00	0.00	
16,000.00	90.00	179.80	8,002.96	-6,104.77	-2,645.67	6,541.26	0.00	0.00	0.00	
16,100.00	90.00	179.80	8,002.96	-6,204.77	-2,645.33	6,638.66	0.00	0.00	0.00	
16,200.00	90.00	179.80	8,002.96	-6,304.77	-2,644.99	6,736.06	0.00	0.00	0.00	
16,300.00	90.00	179.80	8,002.96	-6,404.77	-2,644.64	6,833.46	0.00	0.00	0.00	
16,400.00	90.00	179.80	8,002.96	-6,504.77	-2,644.30	6,930.86	0.00	0.00	0.00	
16,500.00	90.00	179.80	8,002.96	-6,604.77	-2,643.96	7,028.26	0.00	0.00	0.00	
16,600.00	90.00	179.80	8,002.96	-6,704.77	-2,643.61	7,125.66	0.00	0.00	0.00	
16,700.00	90.00	179.80	8,002.96	-6,804.77	-2,643.27	7,223.06	0.00	0.00	0.00	
16,800.00	90.00	179.80	8,002.95	-6,904.77	-2,642.93	7,320.46	0.00	0.00	0.00	
16,900.00	90.00	179.80	8,002.95	-7,004.77	-2,642.59	7,417.86	0.00	0.00	0.00	
17,000.00	90.00	179.80	8,002.95	-7,104.77	-2,642.24	7,515.26	0.00	0.00	0.00	
17,100.00	90.00	179.80	8,002.95	-7,204.77	-2,641.90	7,612.66	0.00	0.00	0.00	
17,200.00	90.00	179.80	8,002.95	-7,304.76	-2,641.56	7,710.07	0.00	0.00	0.00	
17,300.00	90.00	179.80	8,002.95	-7,404.76	-2,641.22	7,807.47	0.00	0.00	0.00	
17,400.00	90.00	179.80	8,002.95	-7,504.76	-2,640.87	7,904.87	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-13N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-13N	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)
17,500.00	90.00	179.80	8,002.95	-7,604.76	-2,640.53	8,002.27	0.00	0.00	0.00
17,600.00	90.00	179.80	8,002.95	-7,704.76	-2,640.19	8,099.67	0.00	0.00	0.00
17,700.00	90.00	179.80	8,002.95	-7,804.76	-2,639.85	8,197.07	0.00	0.00	0.00
17,800.00	90.00	179.80	8,002.95	-7,904.76	-2,639.50	8,294.47	0.00	0.00	0.00
17,900.00	90.00	179.80	8,002.95	-8,004.76	-2,639.16	8,391.87	0.00	0.00	0.00
18,000.00	90.00	179.80	8,002.95	-8,104.76	-2,638.82	8,489.27	0.00	0.00	0.00
18,100.00	90.00	179.80	8,002.95	-8,204.76	-2,638.47	8,586.67	0.00	0.00	0.00
18,200.00	90.00	179.80	8,002.95	-8,304.76	-2,638.13	8,684.07	0.00	0.00	0.00
18,300.00	90.00	179.80	8,002.95	-8,404.76	-2,637.79	8,781.47	0.00	0.00	0.00
18,400.00	90.00	179.80	8,002.95	-8,504.76	-2,637.45	8,878.87	0.00	0.00	0.00
18,500.00	90.00	179.80	8,002.94	-8,604.76	-2,637.10	8,976.27	0.00	0.00	0.00
18,600.00	90.00	179.80	8,002.94	-8,704.76	-2,636.76	9,073.67	0.00	0.00	0.00
18,700.00	90.00	179.80	8,002.94	-8,804.76	-2,636.42	9,171.07	0.00	0.00	0.00
18,800.00	90.00	179.80	8,002.94	-8,904.76	-2,636.08	9,268.47	0.00	0.00	0.00
18,900.00	90.00	179.80	8,002.94	-9,004.75	-2,635.73	9,365.88	0.00	0.00	0.00
19,000.00	90.00	179.80	8,002.94	-9,104.75	-2,635.39	9,463.28	0.00	0.00	0.00
19,100.00	90.00	179.80	8,002.94	-9,204.75	-2,635.05	9,560.68	0.00	0.00	0.00
19,200.00	90.00	179.80	8,002.94	-9,304.75	-2,634.70	9,658.08	0.00	0.00	0.00
19,300.00	90.00	179.80	8,002.94	-9,404.75	-2,634.36	9,755.48	0.00	0.00	0.00
19,400.00	90.00	179.80	8,002.94	-9,504.75	-2,634.02	9,852.88	0.00	0.00	0.00
19,500.00	90.00	179.80	8,002.94	-9,604.75	-2,633.68	9,950.28	0.00	0.00	0.00
19,600.00	90.00	179.80	8,002.94	-9,704.75	-2,633.33	10,047.68	0.00	0.00	0.00
19,700.00	90.00	179.80	8,002.94	-9,804.75	-2,632.99	10,145.08	0.00	0.00	0.00
19,800.00	90.00	179.80	8,002.94	-9,904.75	-2,632.65	10,242.48	0.00	0.00	0.00
19,900.00	90.00	179.80	8,002.94	-10,004.75	-2,632.31	10,339.88	0.00	0.00	0.00
20,000.00	90.00	179.80	8,002.94	-10,104.75	-2,631.96	10,437.28	0.00	0.00	0.00
20,100.00	90.00	179.80	8,002.94	-10,204.75	-2,631.62	10,534.68	0.00	0.00	0.00
20,200.00	90.00	179.80	8,002.93	-10,304.75	-2,631.28	10,632.08	0.00	0.00	0.00
20,300.00	90.00	179.80	8,002.93	-10,404.75	-2,630.93	10,729.48	0.00	0.00	0.00
20,400.00	90.00	179.80	8,002.93	-10,504.75	-2,630.59	10,826.88	0.00	0.00	0.00
20,500.00	90.00	179.80	8,002.93	-10,604.75	-2,630.25	10,924.28	0.00	0.00	0.00
20,600.00	90.00	179.80	8,002.93	-10,704.74	-2,629.91	11,021.69	0.00	0.00	0.00
20,700.00	90.00	179.80	8,002.93	-10,804.74	-2,629.56	11,119.09	0.00	0.00	0.00
20,800.00	90.00	179.80	8,002.93	-10,904.74	-2,629.22	11,216.49	0.00	0.00	0.00
20,900.00	90.00	179.80	8,002.93	-11,004.74	-2,628.88	11,313.89	0.00	0.00	0.00
21,000.00	90.00	179.80	8,002.93	-11,104.74	-2,628.54	11,411.29	0.00	0.00	0.00
21,369.71	90.00	179.80	8,003.00	-11,474.45	-2,627.18	11,771.36	0.00	0.00	0.00
TD at 21369.71									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
NORTHWEST A S20-13 - plan hits target center - Point	0.00	0.00	8,003.00	-11,474.45	-2,627.18	1,225,610.19	3,133,979.31	39° 57' 6.088 N	105° 1' 19.564 W
NORTHWEST A S20-13 - plan hits target center - Point	0.00	0.00	8,003.00	793.57	-2,669.31	1,237,877.79	3,133,869.77	39° 59' 7.329 N	105° 1' 20.122 W

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well NORTHWEST A S20-25-13N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB 25' @ 5318.00usft
Project:	Broomfield County	MD Reference:	KB 25' @ 5318.00usft
Site:	Sec 9-T1S-R68W	North Reference:	True
Well:	NORTHWEST A S20-25-13N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,676.16	5,122.00	SUSSEX			
8,675.30	7,825.00	NIOBRARA			
9,003.72	7,993.00	NIO B TARGET			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,500.00	1,500.00	0.00	0.00	Start Build 2.00	
3,267.63	3,157.58	226.99	-476.99	Start 3286.31 hold at 3267.63 MD	
6,553.93	5,837.92	1,044.08	-2,193.96	Start Drop -2.00	
8,321.56	7,495.50	1,271.07	-2,670.95	Start 30.00 hold at 8321.56 MD	
8,351.56	7,525.50	1,271.07	-2,670.95	Start DLS 12.00 TFO 179.80	
9,101.62	8,003.00	793.57	-2,669.31	Start 12268.09 hold at 9101.62 MD	
21,369.71	8,003.00	-11,474.45	-2,627.18	TD at 21369.71	